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ABSTRACT

This document serves to display several of the National Center for Higher Education Management Systems (NCHEMS) tools as they relate to California State University, Fullerton, which is serving as a pilot implementation site for the California State University and Colleges System for the application of currently available NCHEMS products. Full implementation of new management tools at Fullerton will be accomplished over a prolonged period and information shown as output of various NCHEMS products merely represents initial output. It is yet to be determined how the newly available capabilities will be embedded in the planning and decisionmaking process at Fullerton. This document should be viewed as an illustration of the kinds of information NCHEMS products are capable of producing. (Author/HS)

ED 077428

Implementation of NCHEMS Planning and Management Tools at California State University, Fullerton

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IMPLEMENTATION OF NCHEMS PLANNING AND MANAGEMENT TOOLS AT CALIFORNIA STATE UNIVERSITY, FULLERTON

August 1972

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PREFACE

California State University, Fullerton, is a large, rapidly-growing campus in the California State University and Colleges System. It has five schools and offers a diverse curriculum which includes 28 masters degree programs and 35 bachelors degrees. The 1971-72 enrollments exceeded 15,000 headcount and 11,000 FTE students, most of whom commuted to the campus. The Fullerton campus is 13 years old and has experienced a growth rate during the past five years of 15.4% annually. It is anticipated that the campus must accommodate 25,000 students by 1980.

In search of improved means of fulfilling its stewardship function and planning for the most effective utilization of its limited resources, the California State University and Colleges System developed an early interest in the work of the NCHEMS organization. As the NCHEMS products and techniques have become more refined and available for institutional use, the need to "try the PMS tools out" on the home soil of the CSUC System became apparent. The Harmer Act (Calif. Senate Bill 1239) called for a pilot test of new management practices and techniques by the CSUC system. The Fullerton campus was selected in April, 1972 as an appropriate site for such a pilot test. This project represents the first time that the several available NCHEMS products and techniques have been implemented simultaneously on a single campus.

The one major gap in the array of new management tools available for initial implementation at Fullerton is the lack of a developed procedure for assessing the outcomes of the educational programs housed on the campus. Fullerton staff will be working closely with NCHEMS in this area and as research points out new possibilities, Fullerton expects to launch an experimental outcome assessment effort to complement the new costing and planning techniques.

The goal at Fullerton is to develop an integrated set of capabilities that will make it possible to determine accurately what the institution has produced in the past at what cost and then, with institutional goals and priorities established, to plan ahead for desired outcomes within the limits of available funds. It is anticipated that the results of the Fullerton experience will offer new planning and management techniques to the other campuses of the California State University and Colleges System. The material and data presented in this document represent only the initial implementation phase. Full implementation is bound to be a lengthy process, since it involves much more than mere installation of software and generation of new kinds of information. Full implementation will require involvement and training of all administrative personnel so that they not only are aware of the newly available management approaches, but also are competent in their use and able to integrate the new methodologies into their daily routines.

Fullerton did not have a perfect data base with which to approach the pilot implementation task. While the data base proved adequate, the initial implementation experience disclosed certain strengths and weaknesses of the operational data systems. Without ideal input data, the information presented in this document can be assumed to be only roughly accurate.

Initial implementation of NCHEMS products at California State University, Fullerton, was not easy, nor did it occur without a great deal of staff dedication and effort. However, the experience has proved both rewarding and educational. If higher education is to meet the demands of the future, it cannot afford to neglect the search for improved planning and management. In the final analysis, better utilization of educational dollars will allow educators to serve better the needs of both the students and the larger society.

L. Donald Shields, President,
California State University, Fullerton

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INTRODUCTION

This document serves to display several of the NCHEMS tools as they relate to a specific institution. California State University, Fullerton, is serving as a pilot implementation site for the California State University and Colleges System for the application of currently available NCHEMS products. Fullerton's experience and willingness to share its data and results have made the development of this document possible.

This publication is not intended as an introductory document which thoroughly explains the several NCHEMS management tools. Rather, it assumes that the reader is somewhat familiar with the concepts and technology embodied in the NCHEMS products and is ready to extend his understanding of the products through exposure to the initial implementation results at Fullerton. Those unfamiliar with the work going on at NCHEMS may find it helpful to examine NCHEMS documents which provide detailed explanations of each product prior to study of this publication.

NCHEMS has worked closely with Dr. L. Donald Shields, president of Fullerton, and many of his staff in guiding the initial implementation work. Special appreciation and acknowledgement are extended to Dr. Herbert C. Rutemiller and Gerald Brown of the Quantitative Methods Department for their dedication and overall contribution to the implementation project. Many individuals from the California State University and Colleges' Chancellor's Office have also contributed substantially to the Fullerton project.

Full implementation of new management tools at Fullerton will be accomplished over a prolonged period. Full implementation goes far beyond the mere installation of software packages and involves organizing to use the kinds of information

displayed in this document in the institutional planning process. Information shown below as output of various NCHEMS products merely represents initial output, and it is yet to be determined how the newly available capabilities will be embedded in the planning and decision-making process at Fullerton.

It should also be noted that the information generated at California State University, Fullerton, cannot be assumed to be compatible with similar kinds of information generated on other campuses. A unique and arbitrary set of conventions was used in generating unit costs, allocating support costs, etc. At the time of the Fullerton project, no standard set of agreed-upon cost finding principles or information exchange procedures was available. Definitions and procedures that seemed appropriate to staff conducting the work were used, and it should be clearly understood that use of a different set of definitions, assumptions, and procedures when generating cost data would significantly affect the resulting unit cost information.

This document should be viewed as an illustration of the kinds of information NCHEMS products are capable of producing and not as an attempt to display comparable cost data. That is, the cost figures within this document are illustrative. They are neither exchangeable nor normative.

THE CHANGING APPROACH TO HIGHER EDUCATION PLANNING AND BUDGETING

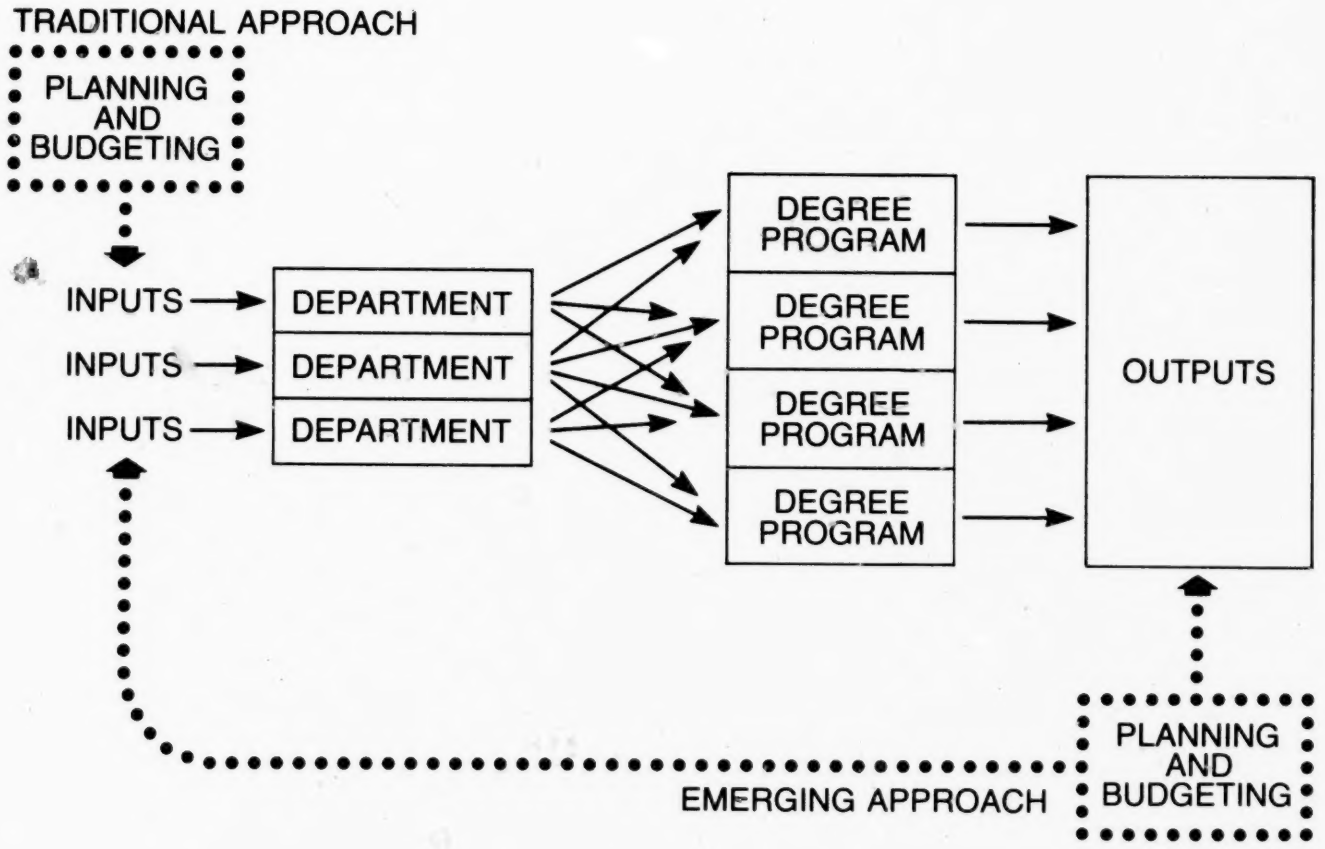


Figure 1

THE CONCEPT OF INSTRUCTIONAL PROGRAM PLANNING AND BUDGETING

Figure 1 depicts the basic concept of program planning and budgeting that NCHEMS is seeking to serve through development of new management tools. Planning and budgeting based on inputs has been the traditional approach. The traditional line-item budget defines the amount of resources required by each of the organizational units (i.e., departments) of an institution. A traditional line-item budget does not relate dollar inputs to outputs.

Today, many projects are competing for public and private dollars. A question commonly posed is, Are the products of higher education worth the cost? The public is wondering whether it is better to build low-cost housing or reduce pollution than to produce more degrees. Educational administrators must address these questions. They are being asked to justify the cost of educational outcomes, and this demand is fostering an emerging approach to planning and budgeting. In this new approach management must establish its output goals, formulate programs intended to produce those outputs, and finally, conduct analyses to define the quantity and mix of resources that must be input to each organizational unit to ensure each program's success. Thus, academic planners are increasingly aware that resources flow into instructional departments only because departments contribute to various degree programs. Currently, many funding agencies are requesting budget formats that link resource requests directly to programs that produce outcomes.

The following pages display several NCHEMS products intended to enhance this new approach to output-oriented planning and program budgeting as they were initially implemented at California State University, Fullerton.

PMS TOOLS

TO GATHER HISTORICAL INFORMATION

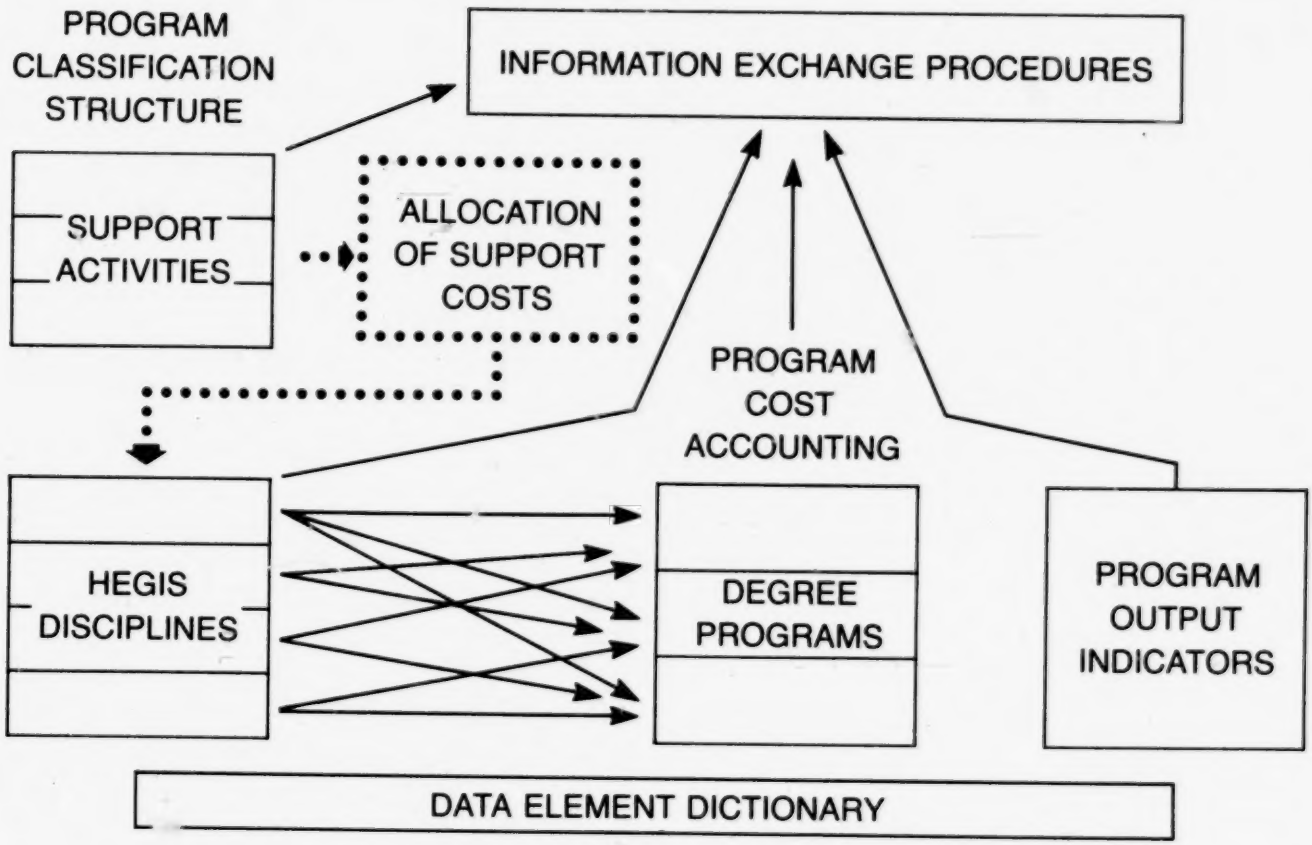


Figure 2

PMS TOOLS FOR COLLECTION OF HISTORICAL INFORMATION

NCHEMS planning and management tools fall into two general categories: (1) those that are used to gather historical data and (2) those that use the historical data as a point of departure to project future costs and assist in planning for future operation. Figure 2 displays some PMS tools concerned with historical data collection.

Institutions that wish to gather historical data for comparative purposes will find the NCHEMS Program Classification Structure (PCS) a valuable asset. The PCS provides standard definitions of cost centers for the primary and support activities of an institution. It may be viewed as a common filing structure to which various kinds of data may be attached. The PCS cost centers in the instructional area consist of a list of disciplines that correspond to the reporting categories required by the Higher Education General Information Survey (HEGIS). Institutional data may be translated into the PCS in preparation for reporting to the U.S. Office of Education through HEGIS.

If an institution determines the cost of instruction in each discipline, degree program costs may be obtained by allowing the dollars to flow from the discipline cost centers to the various degree program cost centers in proportion to the flow of credit hours from disciplines to degree programs. For example, the history discipline costs would flow proportionately to each degree program as students from the various degree programs take credits in the history discipline. If support costs were previously allocated to the disciplines, then these costs would also flow to the degree program cost centers along with the direct instructional costs and would be calculated as part of the total cost of each degree program.

The Resource Requirements Prediction Model (RRPM), which will be discussed later in this document, provides a computational tool for accomplishing the distribution of discipline costs to degree program cost centers through the mechanism of credit hour flow. Although RRPM serves primarily as a projection and planning tool, it may be run with historical data inputs and thus be used as a tool for the development of historical degree program costs.

Two additional areas of concern are program outcome indicators and information exchange procedures. If cost-benefit analysis is to be applied to an institution, good program outcome indicators are necessary. Furthermore, costing and output studies must be performed under precisely the same set of procedures at each institution if information exchange is to have any validity. Both of these areas are receiving a great deal of attention and will continue to be researched over the next few years.

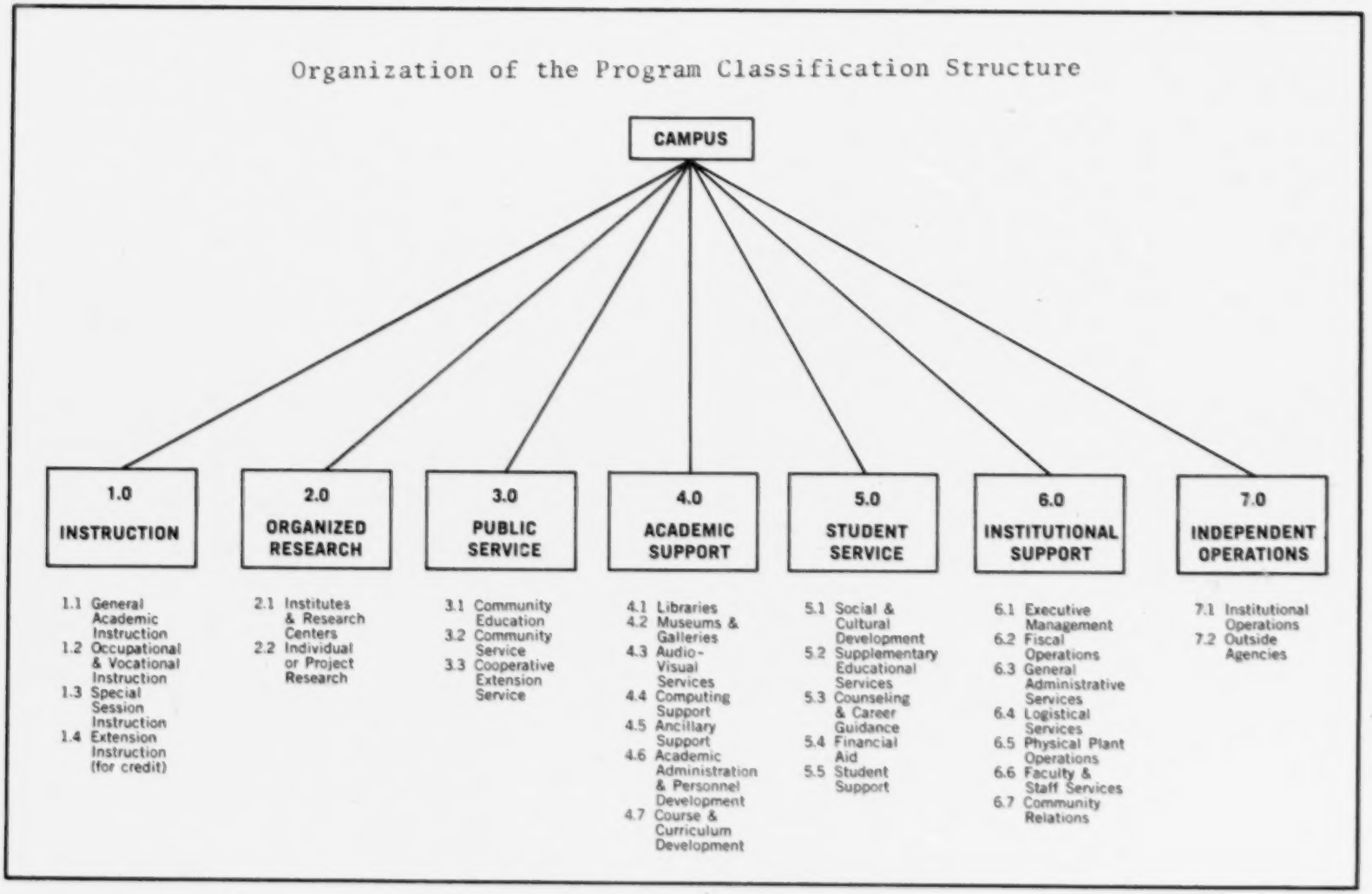

Organization of the Program Classification Structure
CAMPUS
1.0 INSTRUCTION
1.1 General Academic Instruction
1.2 Occupational & Vocational Instruction
1.3 Special Session Instruction
1.4 Extension Instruction (for credit)
2.0 ORGANIZED RESEARCH
2.1 Institutes & Research Centers
2.2 Individual or Project Research
3.0 PUBLIC SERVICE
3.1 Community Education
3.2 Community Service
3.3 Cooperative Extension Service
4.0 ACADEMIC SUPPORT
4.1 Libraries
4.2 Museums & Galleries
4.3 Audio-Visual Services
4.4 Computing Support
4.5 Ancillary Support
4.6 Academic Administration & Personnel Development
4.7 Course & Curriculum Development
5.0 STUDENT SERVICE
5.1 Social & Cultural Development
5.2 Supplementary Educational Services
5.3 Counseling & Career Guidance
5.4 Financial Aid
5.5 Student Support
6.0 INSTITUTIONAL SUPPORT
6.1 Executive Management
6.2 Fiscal Operations
6.3 General Administrative Services
6.4 Logistical Services
6.5 Physical Plant Operations
6.6 Faculty & Staff Services
6.7 Community Relations
7.0 INDEPENDENT OPERATIONS
7.1 Institutional Operations
7.2 Outside Agencies

Figure 3

NCHEMS PROGRAM CLASSIFICATION STRUCTURE

The Program Classification Structure is intended to provide a mechanism that will facilitate the organization of data and the use of various planning and management tools. The Program Classification Structure is oriented to common functional operations and activities found in most institutions of higher education. It is designed to supplement the institution's accounting structure without requiring the institution to restructure its current operational system. For most institutions, a transformation routine can be developed that will provide a crossover from the institution's accounting structure to the Program Classsification Structure without a major change in the data system.

The organization of the Program Classification Structure is displayed in Figure 3. It can be seen that there are seven programs, each of which is divided into subprograms. Although not shown in this figure, each subprogram is further disaggregated into program categories and subcategories, etc.

On the following pages, the year-end expenditure data for the 1971-72 academic year at California State University, Fullerton, are displayed attached to the Program Classification Structure. PCS cost centers under the General Academic Instruction subprogram (1.1) have been carried down to the program sector (eight digits) level of detail. This level corresponds to using discrete lower division, upper division, and graduate level disciplines as cost centers. A faculty assignment analysis was used to determine the proportion of total discipline faculty salaries distributed to levels of instruction. All other direct discipline costs were distributed to levels of instruction in the same proportion as the faculty salaries. Direct discipline costs were considered to include such operating expenses as supplies and equipment, travel, and department administration as well as faculty salaries and support staff wages. Deans and other academic administrators above the department level were not considered a direct instructional expense of disciplines.

Table 1

CALIFORNIA STATE UNIVERSITY, FULLERTON

1971-72 Expenditures in NCHEMS Program (Activity)
Classification Structure Format

PCS NUMBER	NAME	EXPENDITURES
1.1	General Academic Instruction	
1.1.0502	Accounting	
1.1.0502.20	Lower Division	$ 54,507.00
1.1.0502.30	Upper Division	103,132.00
1.1.0502.50	Graduate	21,659.00
		179,298.00
1.1.0313	American Studies	
1.1.0313.20	Lower Division	6,876.00
1.1.0313.30	Upper Division	25,122.00
		31,998.00
1.1.2202	Anthropology	
1.1.2202.20	Lower Division	43,408.00
1.1.2202.30	Upper Division	126,375.00
1.1.2202.50	Graduate	13,529.00
		183,312.00
1.1.1002	Art	
1.1.1002.20	Lower Division	96,734.00
1.1.1002.30	Upper Division	279,612.00
1.1.1002.50	Graduate	54,157.00
		430,503.00
1.1.0401	Biological Science	
1.1.0401.20	Lower Division	134,587.00
1.1.0401.30	Upper Division	265,954.00
1.1.0401.50	Graduate	102,588.00
		503,129.00
1.1.1905	Chemistry	
1.1.1905.20	Lower Division	200,915.00
1.1.1905.30	Upper Division	196,315.00
1.1.1905.50	Graduate	36,712.00
		433,942.00
1.1.0601	Communications	
1.1.0601.20	Lower Division	71,938.00
1.1.0601.30	Upper Division	132,300.00
1.1.0601.50	Graduate	25,889.00
		230,127.00
1.1.1008	Dance	
1.1.1008.20	Lower Division	15,823.00
1.1.1008.30	Upper Division	20,829.00
		36,652.00

Table 1 (Continued)

PCS NUMBER	NAME	EXPENDITURES
1.1.2204	Economics	
1.1.2204.20	Lower Division	$ 74,956.00
1.1.2204.30	Upper Division	89,773.00
1.1.2204.50	Graduate	28,706.00
		193,435.00
1.1.0801	Education	
1.1.0801.20	Lower Division	14,330.00
1.1.0801.30	Upper Division	326,653.00
1.1.0801.50	Graduate	268,785.00
		609,768.00
1.1.0834	Education - Science/Math Ed	
1.1.0834.20	Lower Division	123,152.00
1.1.0834.30	Upper Division	98,912.00
1.1.0834.50	Graduate	2,583.00
		224,647.00
1.1.0901	Engineering	
1.1.0901.20	Lower Division	55,978.00
1.1.0901.30	Upper Division	249,267.00
1.1.0901.50	Graduate	55,437.00
		360,682.00
1.1.1501	English	
1.1.1501.20	Lower Division	166,995.00
1.1.1501.30	Upper Division	563,809.00
1.1.1501.50	Graduate	64,412.00
		795,216.00
1.1.2211	Ethnic Studies - Afro	
1.1.2211.20	Lower Division	22,964.00
1.1.2211.30	Upper Division	27,841.00
		50,805.00
1.1.2213	Ethnic Studies - Chicano	
1.1.2213.20	Lower Division	24,282.00
1.1.2213.30	Upper Division	28,333.00
		52,615.00
1.1.0504	Finance	
1.1.0504.30	Upper Division	133,894.00
1.1.0504.50	Graduate	24,037.00
		157,931.00
1.1.1101	Foreign Language	
1.1.1101.20	Lower Division	163,485.00
1.1.1101.30	Upper Division	125,036.00
1.1.1101.50	Graduate	19,071.00
		307,592.00

Table 1 (Continued)

PCS NUMBER	NAME	EXPENDITURES
1.1.2206	Geography	
1.1.2206.20	Lower Division	$ 81,460.00
1.1.2206.30	Upper Division	86,778.00
1.1.2206.50	Graduate	6,120.00
		174,358.00
1.1.0835	Health - Physical Education	
1.1.0835.20	Lower Division	168,273.00
1.1.0835.30	Upper Division	244,561.00
1.1.0835.50	Graduate	35,654.00
		448,488.00
1.1.2205	History	
1.1.2205.20	Lower Division	89,698.00
1.1.2205.30	Upper Division	351,201.00
1.1.2205.50	Graduate	24,823.00
		465,722.00
1.1.4901	Interdisciplinary Studies	
1.1.4901.20	Lower Division	1,073.00
1.1.4901.30	Upper Division	58,194.00
		59,267.00
1.1.1601	Library Science	
1.1.1601.30	Upper Division	7,596.00
1.1.1601.50	Graduate	40,267.00
		47,863.00
1.1.1505	Linguistics	
1.1.1505.30	Upper Division	32,283.00
1.1.1505.50	Graduate	16,542.00
		48,825.00
1.1.0506	Management	
1.1.0506.30	Upper Division	231,484.00
1.1.0506.50	Graduate	17,210.00
		248,694.00
1.1.0509	Marketing	
1.1.0509.30	Upper Division	163,793.00
1.1.0509.50	Graduate	16,675.00
		180,468.00
1.1.1701	Mathematics	
1.1.1701.20	Lower Division	197,018.00
1.1.1701.30	Upper Division	56,144.00
1.1.1701.50	Graduate	15,730.00
		268,892.00

Table 1 (Continued)

PCS NUMBER	NAME	EXPENDITURES
1.1.1005	Music	
1.1.1005.20	Lower Division	$198,588.00
1.1.1005.30	Upper Division	188,455.00
1.1.1005.50	Graduate	24,880.00
		411,923.00
1.1.1509	Philosophy	
1.1.1509.20	Lower Division	52,207.00
1.1.1509.30	Upper Division	72,691.00
		124,898.00
1.1.1902	Physics	
1.1.1902.20	Lower Division	155,133.00
1.1.1902.30	Upper Division	87,300.00
		242,433.00
1.1.2207	Political Science	
1.1.2207.20	Lower Division	42,580.00
1.1.2207.30	Upper Division	212,930.00
1.1.2207.50	Graduate	51,483.00
		306,993.00
1.1.2001	Psychology	
1.1.2001.20	Lower Division	107,617.00
1.1.2001.30	Upper Division	193,909.00
1.1.2001.50	Graduate	31,137.00
		332,663.00
1.1.0599	Quantitative Methods	
1.1.0599.20	Lower Division	79,704.00
1.1.0599.30	Upper Division	125,330.00
1.1.0599.50	Graduate	11,612.00
		216,646.00
1.1.1510	Religious Studies	
1.1.1510.20	Lower Division	7,992.00
1.1.1510.30	Upper Division	42,241.00
		50,233.00
1.1.2208	Sociology	
1.1.2208.20	Lower Division	52,819.00
1.1.2208.30	Upper Division	252,564.00
1.1.2208.50	Graduate	29,761.00
		335,144.00
1.1.1506	Speech	
1.1.1506.20	Lower Division	75,108.00
1.1.1506.30	Upper Division	173,177.00
1.1.1506.50	Graduate	46,836.00
		295,121.00

Table 1 (Continued)

PCS NUMBER	NAME	EXPENDITURES
1.1.1007	Theater	
1.1.1007.20	Lower Division	$ 80,286.00
1.1.1007.30	Upper Division	185,077.00
1.1.1007.50	Graduate	13,409.00
		278,772.00
1.1	General Academic Instruction Total	9,319,055.00
1.3	Special Session Instruction	655,525.00
1.4	Extension Instruction	61,003.00
2.2	Individual or Project Research	234,577.00
3.2	Community Service	14,848.00
4.1	Libraries	1,276,841.00
4.3	Audio-Visual Services	183,430.00
4.4	Computing Support	309,011.00
4.6.0000	Academic Administration -- Unassigned	367,654.00
4.6.0500	Academic Administration -- Dean of Business Admin. - Econ.	121,024.00
4.6.0800	Academic Administration -- Dean of Education	94,898.00
4.6.1000	Academic Administration -- Dean of Fine & Applied Arts	34,384.00
4.6.4901	Academic Administration -- Dean of Letters - Arts/Science	88,430.00
5.1	Student Services -- Social and Cultural Development	101,888.00
5.1.9501	Dean of Students	73,869.00
5.2	Supplementary Educational Services	450.00
5.3	Counseling and Career Guidance	438,191.00
5.4	Financial Aid Admin.	128,235.00
5.4.0071	Financial Aid Funds -- Transfer Payments	358,485.00
5.4.0074	Work Study -- Campus	65,002.00

Table 1 (Continued)

PCS NUMBER	NAME	EXPENDITURES
5.5	Student Support Services	$ 387,931.00
6.1	Executive Management	395,311.00
6.2	Fiscal Operations	174,506.00
6.3	General Administrative Services	589,416.00
6.4	Logistical Services	860,248.00
6.5	Physical Plant Operations	1,978,157.00
6.7	Community Relations	74,057.00
6.8	Fringe Benefits	976,985.00
7.1	Institutional Operations	32,334.00
	Total Expenditures	19,395,745.00

INSTRUCTIONAL WORK LOAD MATRIX (IWLM)

An Instructional Work Load Matrix defines the relationships between student majors in various fields of study (degree programs) and the instructional disciplines in terms of credit hour consumption. The following three pages provide a display of the California State University, Fullerton, IWLM. The numbers in the cells of the matrices are the total numbers of semester credit hours attempted during 1971-72 at lower division, upper division and graduate course levels in each department (discipline) by each type of major at all student levels. The total semester credit hour production for each discipline (department) at each course level can be determined by summing the rows of the matrices. For display purposes, only selected majors have been shown in the Fullerton IWLM.

The IWLM identifies the total number of credit hours attempted in 1971-72 in each discipline at each course level. These data are used together with the previously displayed direct cost data to calculate the cost per credit hour attempted (unit cost) for each discipline at each course level.

IWLM -- 1971-72 -- CALIFORNIA STATE UNIVERSITY, FULLERTON (SELECTED MAJORS)

Majors -- All Student Levels Taking Lower Division Courses -- Semester Credit Hours Attempted

Majors / Depts.	Acct.	Art	Bio. Sci.	Chem.	Engl.	Geog.	Hist.	Mgmt.	Math	Psych.	All Others	Total
Accounting	366	9	69	21	39	15	84	423	93	66	1695	2880
Am. Studies	21	27	51	0	84	6	75	9	15	51	624	963
Anthro.	129	255	285	12	321	84	384	108	81	282	2739	4680
Art	79	2994	119	10	240	28	148	42	67	131	1358	5216
Bio. Sci.	413	442	1401	126	459	81	470	285	103	418	4693	8891
Chemistry	185	193	1481	188	294	29	285	127	198	201	3563	6744
Communica.	109	156	140	7	172	39	154	127	46	97	2687	3734
Dance	0	36	2	0	28	0	14	0	2	20	419	521
Ed-Sci/Math	132	364	100	26	544	131	371	90	58	196	2490	4502
Economics	552	52	187	35	79	26	158	488	113	103	2839	4632
Education	7	7	33	0	54	3	52	10	5	70	416	657
Engineering	8	6	95	10	0	3	3	10	26	14	852	1027
English	144	324	402	69	1794	33	540	108	168	318	4200	8100
Eth. St-Afr.	21	39	10	0	27	16	60	13	9	54	485	734
Eth. St-Chic.	12	30	18	0	24	0	81	18	9	42	816	1050
Finance	0	0	0	0	0	0	0	0	0	0	0	0
For. Lang.	58	234	722	184	751	53	510	39	244	224	4340	7359
Geography	165	159	268	54	237	706	392	124	83	142	2460	4790
Health-PE	153	243	378	41	288	75	360	118	99	190	3858	5803
History	150	258	573	72	564	42	1194	150	186	330	4074	7593
Interdisc.	6	0	3	6	3	3	9	9	6	15	201	261
Library	0	0	0	0	0	0	0	0	0	0	0	0
Linguistics	0	0	0	0	0	0	0	0	0	0	0	0
Management	0	0	0	0	0	0	0	0	0	0	0	0
Marketing	0	0	0	0	0	0	0	0	0	0	0	0
Math	238	71	1141	356	128	19	117	91	728	506	3157	6552
Music	120	280	294	51	321	22	198	67	80	175	4164	5772
Philosophy	144	177	231	21	267	6	276	102	105	222	2241	3792
Physics	29	5	700	252	15	0	21	11	326	19	1275	2653
Political Sci.	84	165	339	36	279	24	216	66	90	141	2268	3708
Psychology	129	180	402	75	279	15	216	69	150	1179	2436	5130
Quant. Meth.	680	6	97	27	6	13	20	606	124	33	1841	3453
Religious St.	6	6	12	0	24	3	18	3	0	24	126	222
Sociology	129	123	201	24	189	12	210	102	36	192	2094	3312
Speech	93	104	117	6	198	6	120	90	33	98	2091	2956
Theater	54	85	72	3	126	6	82	53	18	54	1679	2232

TABLE 2

IWLM -- 1971-72 -- CALIFORNIA STATE UNIVERSITY, FULLERTON (SELECTED MAJORS)

Majors -- All Student Levels Taking Upper Division Courses -- Semester Credit Hours Attempted

Majors / Depts.	Acct.	Art	Bio. Sci.	Chem.	Engl.	Geog.	Hist.	Mgmt.	Math	Psych.	All Others	Total
Accounting	3672	3	6	0	6	0	27	135	21	0	981	4851
Am. Studies	17	81	24	0	63	9	114	9	3	33	1195	1548
Anthro.	24	168	99	9	171	75	396	60	6	303	5223	6534
Art	15	7557	27	6	141	21	117	36	9	57	1072	9058
Bio. Sci.	14	56	4667	128	57	21	61	29	17	141	1423	6614
Chemistry	3	0	1399	861	7	0	4	5	42	17	316	2654
Communica.	211	131	71	0	211	39	119	238	14	64	6455	7553
Dance	0	7	0	0	9	0	15	0	0	3	260	294
Ed-Sci/Math	29	102	57	28	232	79	187	21	270	68	1279	2352
Economics	1026	6	30	15	21	3	60	759	24	6	2832	4782
Education	45	571	196	19	1573	165	1464	74	138	652	6905	11802
Engineering	0	9	10	6	9	3	6	12	10	3	3619	3687
English	153	615	210	45	11082	108	1384	111	93	525	6854	21180
Eth. St-Afr.	36	90	21	0	54	0	106	3	6	72	1349	1737
Eth. St-Chic.	15	33	20	0	36	0	51	24	24	81	1078	1362
Finance	1215	12	12	3	30	9	27	957	9	18	3275	5567
For. Lang.	9	22	102	57	182	24	40	0	12	38	3015	3501
Geography	45	27	24	3	48	1899	363	63	15	30	947	3464
Health-PE	40	131	97	10	124	93	342	52	30	133	6828	7880
History	93	84	63	12	441	183	8524	102	27	171	3684	13384
Interdisc.	30	177	228	27	273	51	157	75	33	615	2598	4264
Library	18	21	9	0	57	15	57	6	0	6	279	468
Linguistics	3	3	6	0	66	0	15	0	6	27	533	659
Management	1800	39	57	9	42	3	119	3456	27	63	4853	10468
Marketing	1158	18	45	6	15	3	57	1264	3	42	5088	7699
Math	3	3	3	43	12	0	0	3	1131	0	301	1499
Music	7	31	18	0	77	2	83	11	17	32	3257	3535
Philosophy	36	99	15	18	91	15	99	39	75	207	1883	2577
Physics	102	39	52	37	78	18	79	45	108	61	1101	1720
Political Sci.	75	60	135	15	108	96	603	114	30	117	7726	9079
Psychology	18	39	108	18	142	6	77	69	21	5378	2626	8502
Quant. Meth.	1002	0	63	6	0	6	9	910	73	12	2661	4742
Religious St.	54	150	81	3	262	24	217	39	51	291	1597	2769
Sociology	60	51	54	6	213	60	423	117	18	834	11445	13281
Speech	63	18	30	6	103	3	64	180	3	90	4070	4630
Theater	36	54	32	6	71	18	54	58	24	30	3434	3817

TABLE 2 (continued)

Upper Division Courses

IWLM -- 1971-72 -- CALIFORNIA STATE UNIVERSITY, FULLERTON (SELECTED MAJORS)

Majors -- All Student Levels Taking Graduate Level Courses -- Semester Credit Hours Attempted

Majors / Depts.	Acct.	Art	Bio. Sci.	Chem.	Engl.	Geog.	Hist.	Mgmt.	Math	Psych.	All Others	Total
Accounting	3	0	0	0	3	0	3	39	0	0	354	402
Am. Studies	0	0	0	0	0	0	0	0	0	0	0	0
Anthro.	0	3	3	0	0	6	11	0	0	6	297	326
Art	0	790	3	0	0	0	0	0	0	0	167	960
Bio. Sci.	0	0	748	0	0	0	0	0	0	1	75	824
Chemistry	0	0	12	171	0	0	0	0	0	0	19	202
Communica.	0	0	0	0	6	0	0	0	0	0	309	315
Dance	0	0	0	0	0	0	0	0	0	0	0	0
Ed-Sci/Math	0	0	30	12	2	0	0	0	12	0	63	119
Economics	6	0	0	0	3	0	3	36	0	0	448	496
Education	0	21	19	0	156	21	156	26	13	178	7095	7685
Engineering	0	0	0	0	0	0	0	0	0	0	712	712
English	0	3	0	0	903	0	0	0	0	0	243	1149
Eth. St-Afr.	0	0	0	0	0	0	0	0	0	0	0	0
Eth. St-Chic.	0	0	0	0	0	0	0	0	0	0	0	0
Finance	6	0	0	0	3	0	0	42	0	0	300	351
For. Lang.	0	0	0	0	12	0	0	0	0	0	464	476
Geography	0	0	0	0	0	90	3	5	0	0	15	113
Health-PE	0	0	0	0	0	0	0	0	0	0	559	559
History	0	3	1	0	0	0	616	21	0	12	66	719
Interdisc.	0	0	0	0	0	0	0	0	0	3	33	36
Library	0	0	3	0	30	0	24	0	3	0	1714	1774
Linguistics	0	3	0	0	6	0	9	0	0	0	375	393
Management	4	0	0	0	0	0	3	95	0	0	228	330
Marketing	3	0	0	0	0	0	3	27	0	0	234	267
Math	0	0	0	0	0	0	0	0	144	0	0	144
Music	0	0	2	0	0	0	0	0	0	0	236	238
Philosophy	0	0	0	0	0	0	0	0	0	0	0	0
Physics	0	0	0	0	0	0	0	0	0	0	10	10
Political Sci.	0	0	0	0	0	3	12	3	0	0	861	879
Psychology	0	0	1	0	0	0	15	0	0	416	57	489
Quant. Meth.	0	0	0	0	0	0	3	33	0	0	258	294
Religious St.	0	0	0	0	0	0	0	0	0	0	0	0
Sociology	0	0	0	0	0	0	12	9	0	21	732	774
Speech	0	0	0	0	6	0	0	0	0	0	689	695
Theater	0	0	0	0	0	0	0	0	0	0	267	267

TABLE 2 (continued)

DIRECT INSTRUCTIONAL EXPENSE - UNIT COSTS

Unit costs of lower division, upper division, and graduate level instruction in each discipline were developed at Fullerton. These unit costs represent the direct 1971-72 instructional expense per semester credit hour attempted. They were calculated by dividing the total direct instructional expense of each course level within each discipline by the total attempted semester credit hours in each discipline at each level.

Table 3

CALIFORNIA STATE UNIVERSITY, FULLERTON

1971-72 Direct Instructional Cost Per Semester Credit Hour

Based on Recorded Expenditures per Discipline

DISCIPLINE NAME	UNIT COST	DISCIPLINE NAME	UNIT COST
Accounting		Education-Sci/Math Ed	
Lower Division	$ 18.93	Lower Division	$ 27.35
Upper Division	21.24	Upper Division	42.05
Graduate	53.88	Graduate	21.71
American Studies		Engineering	
Lower Division	6.11	Lower Division	54.51
Upper Division	16.23	Upper Division	67.61
		Graduate	77.86
Anthropology		English	
Lower Division	9.28	Lower Division	20.62
Upper Division	19.34	Upper Division	26.62
Graduate	41.50	Graduate	56.06
Art		Ethnic Studies-Afro.	
Lower Division	18.55	Lower Division	31.29
Upper Division	30.87	Upper Division	16.03
Graduate	56.41		
Biological Science		Ethnic Studies-Chic.	
Lower Division	15.14	Lower Division	23.13
Upper Division	40.21	Upper Division	20.80
Graduate	124.50		
		Finance	
Chemistry		Upper Division	24.05
Lower Division	29.79	Graduate	68.48
Upper Division	73.97		
Graduate	181.74	Foreign Language	
		Lower Division	22.22
Communications		Upper Division	35.71
Lower Division	19.27	Graduate	40.07
Upper Division	17.52		
Graduate	82.19	Geography	
		Lower Division	17.01
Dance		Upper Division	25.05
Lower Division	30.37	Graduate	54.16
Upper Division	70.85		
		Health - P.E.	
Economics		Lower Division	29.00
Lower Division	16.18	Upper Division	31.04
Upper Division	18.77	Graduate	63.78
Graduate	57.88		
		History	
Education		Lower Division	11.81
Lower Division	21.81	Upper Division	26.24
Upper Division	27.68	Graduate	34.52
Graduate	34.98		

Table 3 (Continued)

DISCIPLINE NAME	UNIT COST	DISCIPLINE NAME	UNIT COST
Interdisc. Studies		Religious Studies	
Lower Division	$ 4.11	Lower Division	$ 36.00
Upper Division	13.53	Upper Division	15.25
Library Science		Sociology	
Upper Division	16.23	Lower Division	15.95
Graduate	22.70	Upper Division	19.02
Linguistics		Graduate	38.45
Upper Division	48.99	Speech	
Graduate	42.09	Lower Division	25.41
Management		Upper Division	37.40
Upper Division	22.11	Graduate	67.39
Graduate	52.15	Theater	
Marketing		Lower Division	35.97
Upper Division	21.27	Upper Division	48.49
Graduate	62.45	Graduate	50.22
Mathematics			
Lower Division	30.07		
Upper Division	37.45		
Graduate	109.24		
Music			
Lower Division	34.41		
Upper Division	53.31		
Graduate	104.54		
Philosophy			
Lower Division	13.77		
Upper Division	28.21		
Physics			
Lower Division	58.47		
Upper Division	50.46		
Political Science			
Lower Division	11.48		
Upper Division	23.45		
Graduate	58.57		
Psychology			
Lower Division	20.98		
Upper Division	22.81		
Graduate	63.67		
Quantitative Methods			
Lower Division	23.08		
Upper Division	26.43		
Graduate	39.50		

USES OF PCS COST DATA

I. Intra-institutional uses:

1. Improve knowledge of total direct instructional costs in each discipline at each course level

2. Comparison of unit costs among disciplines and course levels

   (a) Leads to examination of disciplines operating outside of acceptable bounds

   (b) Leads to examination of disciplines which consume resources at a rate that is inconsistent with the overall institutional goals and game plan

II. Inter-institutional uses:

1. Accounting and reporting in a relatively standard format

2. Comparison of unit costs with similar institutions

   (a) Establishes norms for various discipline costs

   (b) Raises questions when norms are significantly violated

III. Limitations and concerns:

1. Divergent unit costs of disciplines cannot be adequately evaluated without accompanying outcome or quality indicators

   (a) Must avoid "cheap is best" attitude

2. Will institutions follow prescribed procedures when generating standard unit cost data?

3. Unreliable data may compromise cost study results

ALLOCATION OF SUPPORT COSTS TO INSTRUCTIONAL COST CENTERS

For some purposes it is desirable to determine the full cost of instruction in each discipline at lower division, upper division and graduate course levels. Those purposes may include the negotiation of reimbursement rates for specially contracted instructional activities, establishment of differential tuition rates, or other pricing considerations.

The allocation of such support activities as executive management or physical plant maintenance has never been a very precise art. The basic approach to such support cost allocations is to distribute the support dollars equitably to the primary cost centers on the basis of some commonly applied rule, trying to ensure that the rule selected and used in each instance reasonably reflects the proportionate utilization of the support cost by the primary cost centers.

The following pages display the kinds of parameter data that were available at Fullerton for allocation of the various support costs. Each course level of each discipline was established as a primary cost center. Library costs, for example, could then be allocated to these primary cost centers by means of any one or any combination of the available parameters. That is, library costs could be allocated to primary instructional cost centers on the bases of the proportion of direct expenditures, or faculty salaries, or credit hours, or FTE faculty, or FTE support staff associated with each instructional cost center. It is also possible to combine two or more parameters, forming a new hybrid parameter, for the allocation procedure.

Table 4

CALIFORNIA STATE UNIVERSITY, FULLERTON
Support Cost Allocation Parameter Data

INSTRUCTIONAL COST CENTERS		SUPPORT COST ALLOCATION PARAMETERS				
PCS CODE	NAME	DIRECT * EXPEND.	FACULTY SALARIES	CREDIT HOURS	FTE FACULTY	FTE STAFF
11031320	L.D. American St.	$ 6,867	$ 6,001	963	.43	.06
11031330	U.D. American St.	25,122	21,924	1,548	1.66	.25
11040120	L.D. Biology	134,587	89,633	8,891	7.74	2.48
11040130	U.D. Biology	265,954	177,131	6,614	14.12	4.52
11040150	Grad. Biology	102,588	68,314	824	5.32	1.70
11050220	L.D. Accounting	54,507	48,515	2,880	4.02	.72
11050230	U.D. Accounting	103,132	91,776	4,851	6.57	1.18
11050250	Grad. Accounting	21,659	19,273	402	1.12	.20
11050430	U.D. Finance	133,894	102,853	5,567	7.92	1.74
11050450	Grad. Finance	24,037	18,461	351	1.20	.26
11050630	U.D. Management	231,484	207,666	10,468	16.53	2.31
11050650	Grad. Management	17,210	15,434	330	.96	.14
11050930	U.D. Marketing	163,793	148,963	7,699	11.34	1.13
11050950	Grad. Marketing	16,675	15,168	267	1.03	.10
11059920	L.D. Quant. Meth.	79,704	68,467	3,453	5.62	.96
11059930	U.D. Quant. Meth.	125,330	107,678	4,742	8.70	1.48
11059950	Grad.Quant. Meth.	11,612	9,981	294	.72	.12
11060120	L.D. Comm.	71,938	52,458	3,734	4.82	.77
11060130	U.D. Comm.	132,300	96,458	7,553	8.43	1.35
11060150	Grad. Comm.	25,889	18,880	315	1.24	.20
11080120	L.D. Education	14,330	12,754	657	1.09	.15
11080130	U.D. Education	326,653	290,484	11,802	23.48	3.29
11080150	Grad. Education	268,785	239,058	7,685	16.94	2.37
11083420	L.D. Sci/Math Ed	123,152	98,761	4,502	8.27	1.16
11083430	U.D. Sci/Math Ed	98,912	79,331	2,352	6.61	.93
11083450	Grad. Sci/Math Ed	2,583	2,070	119	.18	.03
11083520	L.D. Health-PE	168,273	115,903	5,803	10.12	2.63
11083530	U.D. Health-PE	244,561	168,472	7,880	13.42	3.49
11083550	Grad. Health-PE	35,654	24,571	559	1.67	.43
11090120	L.D. Engineering	55,978	37,800	1,027	2.63	.82
11090130	U.D. Engineering	249,267	168,295	3,687	12.92	4.00
11090150	Grad. Engineering	55,437	37,434	712	3.06	.95
11100220	L.D. Art	96,734	79,988	5,216	7.23	1.16
11100230	U.D. Art	279,612	231,147	9,058	17.96	2.87

*Direct costs include salaries, wages, dept. administration, and such operating expenses as supplies, travel & minor equipment.

Table 4 (Continued)

INSTRUCTIONAL COST CENTERS		SUPPORT COST ALLOCATION PARAMETERS				
PCS CODE	NAME	DIRECT EXPEND.	FACULTY SALARIES	CREDIT HOURS	FTE FACULTY	FTE STAFF
11100250	Grad. Art	$ 54,157	$ 44,773	960	3.30	.53
11100520	L.D. Music	198,588	158,253	5,772	13.41	3.89
11100530	U.D. Music	188,455	150,172	3,535	11.82	3.43
11100550	Grad. Music	24,880	19,843	238	1.33	.38
11100720	L.D. Theater	80,286	55,105	2,232	4.81	1.68
11100730	U.D. Theater	185,077	127,026	3,817	10.71	3.75
11100750	Grad. Theater	13,409	9,203	267	.73	.26
11100820	L.D. Dance	15,823	11,796	521	1.09	.24
11100830	U.D. Dance	20,829	15,530	294	1.16	.26
11110120	L.D. Foreign Lang.	163,485	138,687	7,359	12.22	1.71
11110130	U.D. Foreign Lang.	125,036	106,005	3,501	8.45	1.18
11110150	Grad.Foreign Lang.	19,071	16,171	476	1.26	.18
11150120	L.D. English	166,995	150,097	8,100	13.15	1.18
11150130	U.D. English	563,809	506,795	21,180	37.76	3.40
11150150	Grad. English	64,412	57,896	1,149	3.97	.36
11150530	U.D. Linguistics	32,283	26,980	659	2.17	.24
11150550	Grad. Linguistics	16,542	13,822	393	.95	.10
11150620	L.D. Speech	75,108	62,364	2,956	5.78	.75
11150630	U.D. Speech	173,177	143,793	4,630	10.96	1.43
11150650	Grad. Speech	46,836	38,883	695	2.64	.34
11150920	L.D. Philosophy	52,207	43,412	3,792	3.91	.47
11150930	U.D. Philosophy	72,691	60,440	2,577	4.38	.53
11151020	L.D. Relig. St.	7,992	7,916	222	.51	.05
11151030	U.D. Relig. St.	42,241	41,828	2,769	2.78	.28
11160130	U.D. Library Sci.	7,596	7,210	468	.51	.00
11160150	Grad. Library Sci.	40,267	38,207	1,774	3.40	.00
11170120	L.D. Math	197,018	172,566	6,552	13.17	1.58
1170130	U.D. Math	56,144	49,165	1,499	3.66	.44
11170150	Grad. Math	15,730	13,780	144	.79	.10
11190220	L.D. Physics	155,133	95,236	2,653	7.01	3.58
11190230	U.D. Physics	87,300	53,584	1,730	3.78	1.93
11190520	L.D. Chemistry	200,915	122,358	6,744	9.64	4.82
11190530	U.D. Chemistry	196,315	119,556	2,654	9.67	4.83
11190550	Grad. Chemistry	36,712	22,366	202	1.64	.82

Table 4 (Continued)

INSTRUCTIONAL COST CENTERS		SUPPORT COST ALLOCATION PARAMETERS				
PCS CODE	NAME	DIRECT EXPEND.	FACULTY SALARIES	CREDIT HOURS	FTE FACULTY	FTE STAFF
11200120	L.D. Psychology	$107,617	$ 83,022	5,130	6.78	.95
11200130	U.D. Psychology	193,909	149,558	8,502	12.73	1.78
11200150	Grad. Psychology	31,137	24,017	489	1.49	.21
11220220	L.D. Anthropology	43,408	38,445	4,680	3.38	.37
11220230	U.D. Anthropology	126,375	111,908	6,534	9.69	1.07
11220250	Gr. Anthropology	13,529	11,982	326	1.01	.11
11220420	L.D. Economics	74,956*	74,923	4,632	6.03	.48
11220430	U.D. Economics	89,773*	89,719	4,782	6.96	.56
11220450	Grad. Economics	28,706*	28,701	496	1.94	.16
11220520	L.D. History	89,698	79,218	7,593	6.28	.69
11220530	U.D. History	351,201	310,106	13,384	24.46	2.69
11220550	Grad. History	24,823	21,905	719	1.45	.16
11220620	L.D. Geography	81,460	64,687	4,790	5.76	.75
11220630	U.D. Geography	86,778	68,908	3,464	5.43	.71
11220650	Grad. Geography	6,120	4,858	113	.38	.05
11220720	L.D. Polit. Sci.	42,580	33,185	3,708	3.33	.37
11220730	U.D. Polit. Sci.	212,930	190,967	9,079	15.06	1.66
11220750	Grad. Polit. Sci.	51,483	46,183	879	3.50	.38
11220820	L.D. Sociology	52,819	42,401	3,312	3.81	.49
11220830	U.D. Sociology	252,564	202,743	13,281	17.61	2.29
11220850	Grad. Sociology	29,761	23,903	774	2.02	.26
11221120	L.D. Eth St-Afro	22,964	19,390	734	1.78	.45
11221130	U.D. Eth St-Afro	27,841	23,504	1,737	2.20	.55
11221320	L.D. Eth St-Chic.	24,282	23,880	1,050	2.06	.00
11221330	U.D. Eth St-Chic.	28,333	27,864	1,362	2.33	.00
11490120	L.D. Interdisc.	1,073*	1,313	261	.13	.00
11490130	U.D. Interdisc.	58,194*	71,193	4,300	5.25	.00

*Note: Due to lending and borrowing of faculty and support staff across departmental boundaries, actual direct expenditures recorded through the accounting system for some departments may be less than the total payroll for individuals teaching courses and working in those departments or disciplines.

SELECTION OF SUPPORT COST ALLOCATION PARAMETERS

The NCHEMS Cost Finding Principles software provides a tool for allocating support costs by means of whatever parameters are available. Once the primary and support cost centers and their associated direct expenditures are established and, together with the parameter data, are input to the CFP software, the user may issue free-form English language commands that cause the software to do all mathematical calculations necessary to diminish the support accounts and increment the primary accounts.

Fullerton personnel carefully considered each PCS support cost center and its relationship to the institutional activities of the campus. Using their best judgment, they decided (1) the portion of each support activity cost to be allocated to instructional cost centers and (2) the most appropriate available parameters for accomplishing the allocations. These decisions are shown on the following two pages. Obviously, the selected allocation procedures represent only the current best judgment of the Fullerton staff and do not reflect any standard set of procedures for development of full cost data. Had additional allocation parameter data been available at Fullerton, it is likely that a somewhat different set of allocation procedurs would have been selected.

Table 5
CALIFORNIA STATE UNIVERSITY, FULLERTON

Support Costs Selected for Allocation to Instruction

SUPPORT COST CENTERS		% ALLOCATED TO INSTRUCTION	ALLOCATION PARAMETER
PCS CODE	NAME		
4.1	Libraries	95%	Allocated to all disciplines by FTE Faculty.
4.3	Audio-visual Services	100%	Allocated to all disciplines by FTE Faculty.
4.4	Computing Support	32.4% 3.6 18 6 30 90%	Directly to L.D.Quant.Methods. Directly to U.D.Quant.Methods. Directly to L.D.Engineering. Allocated to all course levels of Physics and Chemistry by credit hours. Allocated to all course levels of all disciplines by credit hours.
4.6.000	Academic Administration -- Unassigned	100%	Allocated to all disciplines by FTE Faculty.
4.6.0500	Dean of Business Administration and Economics	100%	Allocated to Business School disciplines by FTE Faculty.
4.6.0800	Dean of Education	100%	Allocated to Education disciplines by FTE Faculty.
4.6.1000	Dean of Fine and Applied Arts	100%	Allocated to Fine and Applied Arts disciplines by FTE Faculty.
4.6.4901	Dean of Letters, Arts and Sciences	100%	Allocated to Letters, Arts, and Sciences disciplines by FTE Faculty.
5.1	Student Social-Cultural Development	100%	Allocated to L.D. and U.D. course levels of all disciplines by credit hours.
5.1.9501	Dean of Students	100%	Allocated to L.D. and U.D. course levels of all disciplines by credit hours.
5.2	Supplementary Education	100%	Allocated to L.D. and U.D. course levels of all disciplines by credit hours.

Table 5 (Continued)

SUPPORT COST CENTERS		% ALLOCATED TO INSTRUCTION	ALLOCATION PARAMETER
PCS CODE	NAME		
5.3	Counseling and Career Guidance	100%	Allocated to L.D. and U.D. course levels of all disciplines by credit hours.
5.4	Financial Aid Administration	100%	Allocated to all disciplines by credit hours
5.4.0071	Financial Aid Funds -- Transfer Payments	No Allocations	
5.4.0074	Work Study -- Campus	90%	Allocate to all disciplines by total expenditures.
5.5	Student Support Services	No Allocations	
6.1	Executive Management	75%	Allocated to all disciplines by FTE Faculty.
6.2	Fiscal Operations	90%	Allocated to all disciplines by total expenditures + credit hours.
6.3	General Administrative Services	100%	Allocated to all disciplines by credit hours.
6.4	Logistical Services	90%	Allocated to all disciplines by credit hours.
6.5	Physical Plant Operations	90%	Allocated to all disciplines by 2 X total expenditures + 1 X credit hours.
6.7	Community Relations	90%	Allocated to all disciplines by FTE Faculty.
6.8	Fringe Benefits	90%	Allocated to all disciplines by Faculty salaries.
7.1	Institutional Operations	No Allocations	

INSTRUCTIONAL FULL-COST DATA

The following pages display the results of using the NCHEMS Cost Finding Principles software with the allocation procedures previously described. During the initial phase of the Fullerton implementation project, support costs were allocated by the direct method to only the instructional cost centers. The usefulness of full-cost data for internal management purposes is probably quite limited. However, many institutions find it necessary to develop full-cost information for such external pricing purposes as the negotiation of overhead and reimbursement rates. It is frequently the research cost centers for which it is most important to develop full-cost data.

Table 6

CALIFORNIA STATE UNIVERSITY, FULLERTON

Support Cost Allocations

INSTRUCTIONAL COST CENTERS		DIRECT COST *	ALLOCATED SUPPORT COST	DIRECT PLUS SUPPORT COSTS	FULL COST PER CREDIT HOUR
PCS CODE	NAME				
11031320	L.D. American St.	$ 6,876	$ 10,146	$ 17,022	$ 17.68
11031330	U.D. American St.	25,122	24,490	49,612	32.05
11040120	L.D. Biology	134,587	128,486	263,073	29.59
11040130	U.D. Biology	265,954	176,452	442,406	66.89
11040150	Grad. Biology	102,588	54,409	156,997	190.53
11050220	L.D. Accounting	54,507	57,034	111,541	38.73
11050230	U.D. Accounting	103,132	98,460	201,592	41.56
11050250	Grad. Accounting	21,659	14,432	36,091	89.78
11050430	U.D. Finance	133,894	118,222	252,116	45.29
11050450	Grad. Finance	24,037	15,116	39,153	111.55
11050630	U.D. Management	231,484	228,107	459,591	43.90
11050650	Grad. Management	17,210	11,689	28,889	87.54
11050930	U.D. Marketing	163,793	140,430	304,233	39.52
11050950	Grad. Marketing	16,675	11,736	28,411	106.41
11059920	L.D. Quant. Meth.	79,704	176,866	256,570	74.30
11059930	U.D. Quant. Meth.	125,330	126,678	252,008	53.14
11059950	Grad. Quant. Meth.	11,612	8,617	20,229	68.81
11060120	L.D. Comm.	71,938	65,060	136,998	36.69
11060130	U.D. Comm.	132,300	122,575	254,875	33.74
11060150	Grad. Comm.	25,889	13,890	39,779	126.28
11080120	L.D. Education	14,330	14,850	29,180	44.41
11080130	U.D. Education	326,653	320,787	647,440	54.86
11080150	Grad. Education	268,785	221,831	490,616	63.84
11083420	L.D. Sci/Math Ed	123,152	97,788	220,940	49.08
11083430	U.D. Sci/Math Ed	98,912	71,764	170,676	72.57
11083450	Grad. Sci/Math Ed	2,583	1,758	4,341	36.48
11083520	L.D. Health-PE	168,273	124,611	292,884	50.47
11083530	U.D. Health-PE	244,561	172,866	417,427	52.97
11083550	Grad. Health-PE	35,654	18,930	54,584	97.65
11090120	L.D. Engineering	55,978	88,252	144,230	140.44
11090130	U.D. Engineering	249,267	144,055	393,322	106.68
11090150	Grad. Engineering	55,437	30,415	85,852	120.58
11100220	L.D. Art	96,734	94,169	190,903	36.60
11100230	U.D. Art	279,612	220,244	499,856	55.18

*Direct costs include salaries, wages, dept. administration, & such operating expenses as supplies, travel & minor equipment.

Table 6 (Continued)

INSTRUCTIONAL COST CENTERS		DIRECT COST	ALLOCATED SUPPORT COST	DIRECT PLUS SUPPORT COSTS	FULL COST PER CREDIT HOUR
PCS CODE	NAME				
11100250	Grad. Art	$ 54,157	$ 34,829	$ 88,986	$ 92.69
11100520	L.D. Music	198,588	154,088	352,676	61.10
11100530	U.D. Music	188,455	129,566	318,021	89.96
11100550	Grad. Music	24,880	14,082	38,962	163.71
11100720	L.D. Theater	80,286	58,046	138,332	61.98
11100730	U.D. Theater	185,077	123,437	308,514	80.83
11100750	Grad. Theater	13,409	8,043	21,452	80.34
11100820	L.D. Dance	15,823	12,316	28,139	54.01
11100830	U.D. Dance	20,829	12,699	33,528	114.04
11110120	L.D. Foreign Lang.	163,485	147,673	311,158	42.28
11110130	U.D. Foreign Lang.	125,036	95,135	220,171	62.89
11110150	Grad.Foreign Lang.	19,071	12,892	31,963	67.15
11150120	L.D. English	166,995	158,229	325,224	40.15
11150130	U.D. English	563,809	467,836	1,031,645	48.71
11150150	Grad. English	64,412	40,110	104,522	90.97
11150520	U.D. Linguistics	32,283	22,025	54,308	82.41
11150550	Grad. Linguistics	16,542	10,266	26,808	68.21
11150620	L.D. Speech	75,108	63,626	138,734	46.93
11150630	U.D. Speech	173,177	108,325	281,502	60.80
11150650	Grad. Speech	46,836	27,270	74,106	106.63
11150920	L.D. Philosophy	52,207	55,600	107,807	28.43
11150930	U.D. Philosophy	72,691	54,943	127,634	49.53
11151020	L.D. Relig. St.	7,992	5,931	13,923	62.72
11151030	U.D. Relig. St.	42,241	42,191	84,432	30.94
11160130	U.D. Library Sci.	7,596	7,398	14,994	32.04
11160150	Grad. Library Sci.	40,267	33,761	74,028	41.73
11170120	L.D. Math	197,018	156,985	354,003	54.03
11170130	U.D. Math	56,144	41,772	97,916	65.32
11170150	Grad. Math	15,730	8,381	24,111	167.44
11190220	L.D. Physics	155,133	82,955	238,088	89.74
11190230	U.D. Physics	87,300	53,137	140,437	81.18
11190520	L.D. Chemistry	200,915	135,082	335,997	49.82
11190530	U.D. Chemistry	196,315	114,398	310,731	117.08
11190550	Grad. Chemistry	36,712	17,894	54,606	270.33

Table 6 (Continued)

INSTRUCTIONAL COST CENTERS		DIRECT COST	ALLOCATED SUPPORT COST	DIRECT PLUS SUPPORT COSTS	FULL COST PER CREDIT HOUR
PCS CODE	NAME				
11200120	L.D. Psychology	$107,617	$ 92,973	$200,590	$ 39.10
11200130	U.D. Psychology	193,909	164,992	358,901	42.21
11200150	Grad. Psychology	31,137	17,248	48,385	98.95
11220220	L.D. Anthropology	43,408	57,824	101,232	21.63
11220230	U.D. Anthropology	126,375	121,028	247,403	37.86
11220250	Grad.Anthropology	13,529	9,731	23,260	71.35
11220420	L.D. Economics	74,956	86,427	161,383	34.84
11220430	U.D. Economics	89,773	96,948	186,721	39.05
11220450	Grad. Economics	28,706	21,586	50,292	101.40
11220520	L.D. History	89,698	103,246	192,944	25.41
11220530	U.D. History	351,201	295,561	646,762	48.32
11220550	Grad. History	24,823	16,746	41,569	57.82
11220620	L.D. Geography	81,460	79,086	160,546	33.52
11220630	U.D. Geography	86,778	70,712	157,490	45.46
11220650	Grad. Geography	6,120	3,575	9,695	85.80
11220720	L.D. Polit. Sci.	42,580	50,523	93,103	25.11
11220730	U.D. Polit. Sci.	212,930	186,787	399,717	44.03
11220750	Grad. Polit. Sci.	51,483	34,196	85,679	97.47
11220820	L.D. Sociology	52,819	53,098	105,917	31.98
11220830	U.D. Sociology	252,564	234,707	487,271	36.69
11220850	Grad. Sociology	29,761	20,597	50,358	65.06
11221120	L.D. Eth St-Afro	22,964	18,673	41,637	56.73
11221130	U.D. Eth St-Afro	27,841	28,839	56,680	32.63
11221320	L.D. Eth St-Chic.	24,282	22,768	47,050	44.81
11221330	U.D. Eth St-Chic.	28,333	27,356	55,689	40.89
11490120	L.D. Interdisc.	1,073	2,517	3,590	13.75
11490130	U.D. Interdisc.	58,194	69,750	127,944	29.75

USES OF FULL-COST DATA

I. Intra-institutional uses:

1. Department administrators gain understanding of the fact that support services are not a free good

II. Inter-institutional uses:

1. Pricing of specially contracted activities and programs, e.g., negotiation of research overhead rates

2. Consideration of differential tuition rates

III. Limitations and concerns:

1. Relationships between support and primary activities are not completely understood; hence, the best allocation methods are not known

2. Allocation parameter data may be difficult to collect

   (a) Some highly desirable allocation paramaters may not be available

STUDENT FLOW PROJECTION DATA

PMS TOOLS FOR PROJECTION AND PLANNING

INSTITUTIONAL
OBJECTIVES

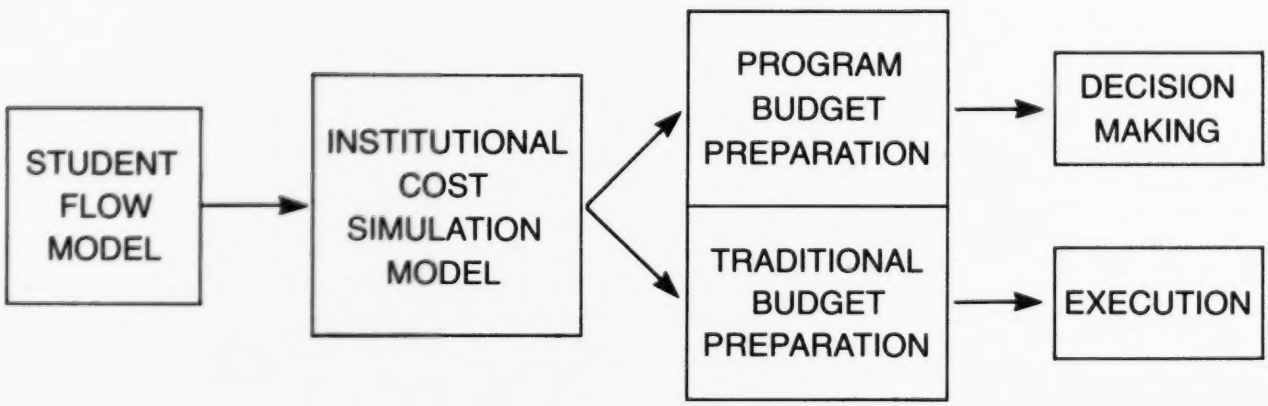


Figure 4

PMS TOOLS FOR PROJECTION AND PLANNING

Once an institution knows its current program costs and outcomes, it has a base on which to plan for future operations. Alternative plans can be developed that will lead the institution toward its objectives. Student flow models and cost simulation models can be very helpful at this point in evaluating various plans and in predicting the long-range resource requirements that are being committed by current decisions.

Student flow models may be used to project student enrollments by major and by student level within the institution. This is valuable information that serves as a principal input to a cost simulation model. NCHEMS cost simulation models use student enrollments and planning parameters related to faculty, classes, support staff, supplies and equipment, etc., to forecast in a program budget format the resources required when the institution is operated in accordance with a variety of alternative plans.

Using a program budget, decision makers can compare the costs of alternatives and weigh these costs against the anticipated benefits of each alternative. In addition, PMS tools may be used to generate a traditional budget that will show the flow of resources to various departments as required to implement a desired set of programs. Thus, PMS tools are able to generate program budgets for program decision making and traditional line-item budgets for program execution and daily operation.

STUDENT FLOW FOR TYPE A MAJORS

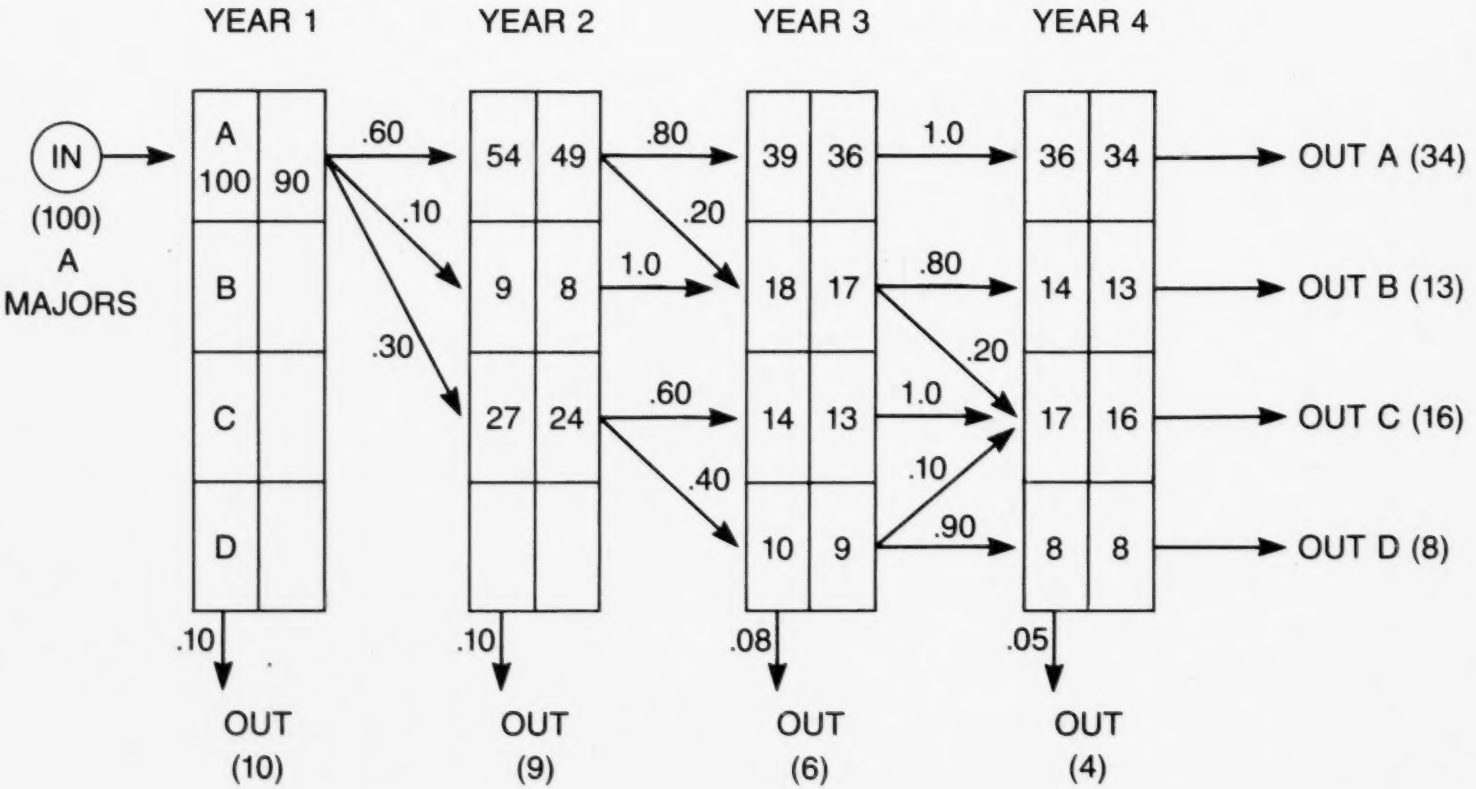


Figure 5

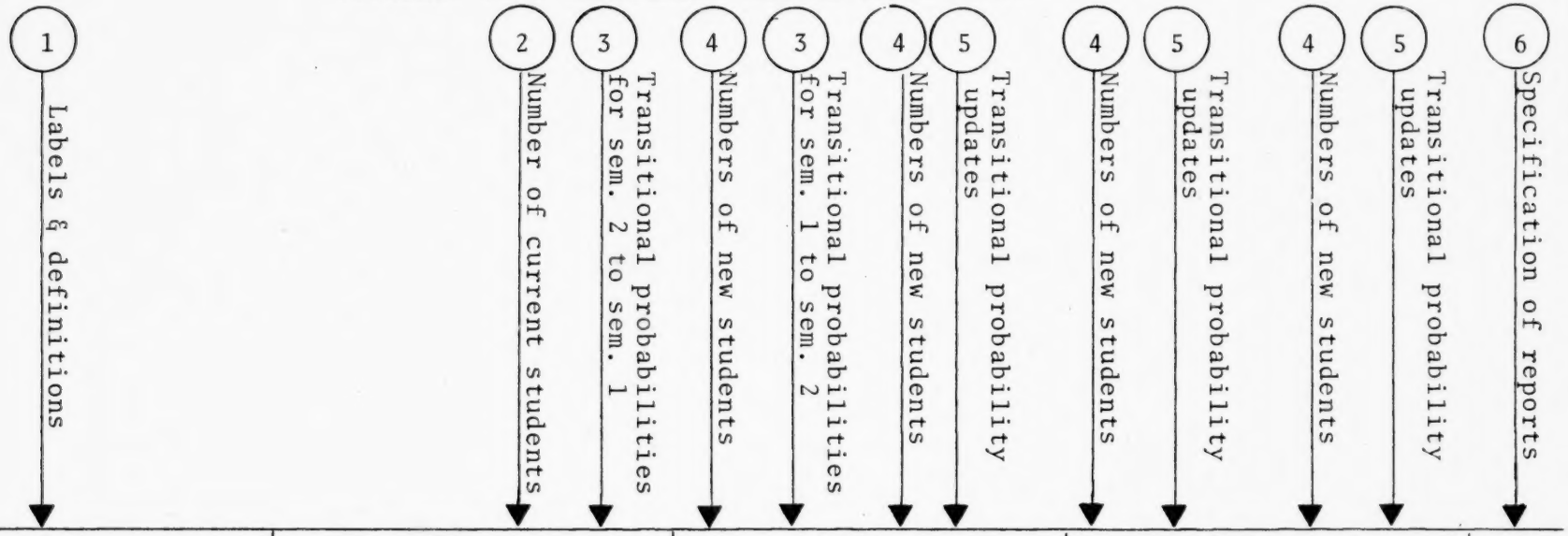
STUDENT FLOW MODEL

A student flow model may take different forms. The NCHEMS model uses transitional probabilities to forecast the flow of students between majors from one year to the next. In Figure 5, 100 Type A majors enter the institution in Year One. During Year One, ten percent leave the institution. Of those students who remain, sixty percent continue as type A majors in Year Two; ten percent switch to type B majors; and thirty percent switch to type C. This same cycle repeats itself through Year Four, producing, in this example, 34 type A graduates; 13 type B graduates; 16 type C graduates; and 8 type D graduates.

Obviously, good predictions from this model are dependent on valid and reliable transition probabilities. Tests have been completed that demonstrate the advantage of this approach to forecasting student flow. NCHEMS, in cooperation with pilot institutions, is researching various methods of developing and using student flow models.

A great advantage of the type of student flow model shown in Figure 5 is its flexibility. The flow of various student categories (male, female, minority groups) may be examined individually. The attrition rates of different majors may be compared. The effect of changing admission policies related to certain types of students can be examined and analyzed. Through the use of a student flow model, the educator can understand better what is happening to different groups of students as they pass through his institution. This improved understanding can lead to efforts to shape the institution to offer the best possible service to various categories of students.

STUDENT FLOW ENROLLMENT MODULE INPUT DATA



MAJORS AND STUDENT LEVELS	YEAR 1 SEMESTER 1	YEAR 1 SEMESTER 2	YEAR 2 SEMESTER 1	YEAR 2 SEMESTER 2	YEAR 2 SEMESTER 1	YEAR 2 SEMESTER 2
Accounting						
Lower Division						
Upper Division						
Graduate						
American Studies						
Lower Division						
Upper Division						
Graduate						
Anthropology						
Lower Division						
Upper Division						
Graduate						
Art						
Lower Division						
Upper Division						
Graduate						
Biological Science						
Lower Division						
Upper Division						
Graduate						

REPORT DATA

Figure 6

STUDENT FLOW MODEL INPUT DATA

California State University, Fullerton, made use of an early version of the NCHEMS Student Flow Model. Figure 6 depicts the specific types of input data necessary for that application. Input (1) simply defines the list of student majors to be traced through the institution. Input (2) defines the known student enrollments during a specific past semester. This point in time and the known enrollments provide the baseline starting point for beginning to project student flows into the future. Input (3) consists of all transition probabilities related to each major at each student level that will be used to transition students from one semester to the next. Input (4) identifies the number of new students at each level of each major who enter the institution during successive semesters. Input (5) allows the user to alter the transitional probabilities prior to their repeated use for successive forecasts. Finally, after the projection of student flows for a number of years, Input (6) specifies the types of reports the user wishes to have printed.

The transitional probabilities (Input 3) were developed for Student Flow Model input by the NCHEMS Student Flow Model Input Data Generator. A sample of the kind of information generated by this software is displayed in Table 7. The fall semester distribution percentages of entering freshmen to various fields of study appear in the right-hand column. These distribution percentages were calculated from three years of historical data.

Table 7

STUDENT FLOW MODEL INPUT DATA GENERATOR
Distribution Percentages -- Fall Semester
Entering Freshmen to Fields of Study

FIELD OF STUDY	ENTERING FRESHMEN PERCENTAGES
Accounting	1.4%
Anthropology	.6
Area Studies	.1
Art	3.9
Biological Science	7.4
Chemistry	1.4
Communications	2.6
Computer Science	.2
Earth Science	.2
Economics	.4
Education	.3
Engineering	5.1
English	7.8
Finance	.4
Foreign Language	3.3
General Business	3.9
Geography	.2
Health-PE	2.0
History	6.0
Linguistics	.3
Management	1.4
Marketing	.4
Math	3.9
Music	2.8
Philosophy	.4
Physics	.6
Political Science	4.3
Psychology	4.4
Quantitative Methods	.3
Sociology	3.4
Speech	.4
Theater	2.0
Undeclared/Other	28.2
	100.0%

FULLERTON STUDENT FLOW PROJECTIONS

The following pages (Tables 8 and 9) display the Fullerton Student Flow headcount projections in terms of both numbers of enrollees and numbers of graduates by field of study. Starting with known headcount enrollments for the spring semester, 1972, and transitional probabilities developed through analysis of three years of historical data (using the NCHEMS Student Flow Input Data Generator), projections were made for each semester through spring, 1976.

NCHEMS STUDENT FLOW MODEL I-A TABLE 8

REPORT OF ENROLLMENTS BY MAJOR

MAJORS AND STUDENT LEVELS	1971-72	1972-1973		1973-1974		1974-1975		1975-1976	
	Spring (Actual)	Fall (Projected)	Spring	Fall	Spring	Fall	Spring	Fall	Spring
Accounting									
Lower Division	82	93	93	101	100	109	110	117	118
Upper Division	631	627	644	648	675	687	717	730	762
Graduate	12	25	25	32	30	35	33	38	35
Anthropology									
Lower Division	46	57	58	63	63	68	68	72	72
Upper Division	221	220	230	241	253	266	277	288	299
Graduate	33	30	40	36	45	40	50	45	54
Area Studies									
Lower Division	35	35	36	34	35	35	36	35	37
Upper Division	162	161	159	163	160	162	159	163	160
Art									
Lower Division	143	199	186	230	209	250	225	266	239
Upper Division	588	593	619	649	683	716	750	775	806
Graduate	96	112	120	131	139	151	158	167	174
Biological Sciences									
Lower Division	250	325	273	340	288	359	305	378	322
Upper Division	421	505	479	561	528	601	565	638	601
Graduate	115	115	121	124	131	134	143	146	155
Chemistry									
Lower Division	34	46	42	50	46	54	49	57	52
Upper Division	82	97	87	106	95	116	103	124	110
Graduate	22	18	21	18	21	19	22	20	23
Communications									
Lower Division	120	144	116	143	117	151	124	159	131
Upper Division	344	374	385	416	423	449	455	480	486
Graduate	72	76	79	84	88	93	97	103	106

NCHEMS STUDENT FLOW MODEL I-A

REPORT OF ENROLLMENTS BY MAJOR

TABLE 8 (continued)

MAJORS AND STUDENT LEVELS	1971-72	1972-1973		1973-1974		1974-1975		1975-1976	
	Spring (Actual)	Fall (Projected)	Spring	Fall	Spring	Fall	Spring	Fall	Spring
Computer Science									
Lower Division	19	26	23	32	28	38	34	45	41
Upper Division	44	54	50	63	59	75	71	90	86
Earth Science									
Lower Division	10	8	5	5	4	5	4	5	4
Upper Division	35	48	48	57	53	61	56	65	59
Economics									
Lower Division	20	16	22	17	22	17	23	17	25
Upper Division	65	74	87	96	103	108	113	116	121
Graduate	29	24	22	22	22	22	22	23	22
Education									
Graduate	1105	903	901	787	813	744	787	740	792
Engineering									
Lower Division	77	146	119	174	137	188	148	199	156
Upper Division	175	222	218	262	258	302	292	334	321
Graduate	137	163	166	190	190	215	213	237	233
English									
Lower Division	210	319	290	366	327	396	350	418	371
Upper Division	728	730	758	848	876	959	979	1045	1057
Graduate	184	204	230	230	258	257	287	285	316
Finance									
Lower Division	9	18	18	21	20	23	22	24	23
Upper Division	178	187	208	217	235	239	256	257	273
Graduate	14	23	20	27	23	31	26	34	28
Foreign Language									
Lower Division	104	124	109	137	118	146	127	154	132
Upper Division	180	193	179	198	185	210	196	224	210
Graduate	60	67	70	72	76	79	83	86	90

NCHEMS STUDENT FLOW MODEL I-A TABLE 8 (continued)

REPORT OF ENROLLMENTS BY MAJOR

MAJORS AND STUDENT LEVELS	1971-72	1972-1973		1973-1974		1974-1975		1975-1976	
	Spring (Actual)	Fall (Projected)	Spring	Fall	Spring	Fall	Spring	Fall	Spring
General Business									
Lower Division	143	185	147	195	157	208	168	220	177
Upper Division	393	426	361	417	365	439	387	465	410
Graduate	233	263	250	289	276	319	304	349	331
Geography									
Lower Division	18	22	34	31	41	37	44	39	47
Upper Division	168	166	175	182	196	206	220	227	242
Graduate	30	27	31	30	35	32	37	35	41
History									
Lower Division	164	266	235	313	267	338	286	360	305
Upper Division	678	769	814	934	966	1064	1082	1160	1169
Graduate	173	188	243	255	316	312	376	360	426
Library Science									
Graduate	164	202	198	242	238	290	286	350	346
Linguistics									
Lower Division	14	14	15	15	16	16	16	18	19
Upper Division	29	34	29	30	27	28	26	28	28
Graduate	28	27	21	24	19	23	18	23	18
Management									
Lower Division	55	94	89	110	99	120	106	127	115
Upper Division	544	602	619	691	699	764	766	827	822
Graduate	44	71	74	91	89	104	100	115	109
Marketing									
Lower Division	26	36	33	41	37	44	39	46	42
Upper Division	363	355	416	417	475	465	524	504	563
Graduate	20	35	37	47	47	55	53	61	58
Math									
Lower Division	86	119	91	126	98	137	105	145	111
Upper Division	128	154	148	167	159	180	172	193	184
Graduate	27	26	31	30	36	34	39	38	44

NCHEMS STUDENT FLOW MODEL I-A TABLE 8 (continued)

REPORT OF ENROLLMENTS BY MAJOR

MAJORS AND STUDENT LEVELS	1971-72	1972-1973		1973-1974		1974-1975		1975-1976	
	Spring (Actual)	Fall (Projected)	Spring	Fall	Spring	Fall	Spring	Fall	Spring
Music									
Lower Division	124	138	120	137	121	144	128	152	135
Upper Division	196	195	190	199	196	208	205	220	217
Graduate	60	57	59	56	60	59	62	61	65
Philosophy									
Lower Division	13	17	20	20	22	22	24	23	25
Upper Division	78	69	71	71	74	76	82	81	88
Physics									
Lower Division	30	20	19	16	16	16	16	17	17
Upper Division	41	44	40	43	39	42	38	41	39
Physical Education									
Lower Division	84	134	121	158	137	172	148	185	158
Upper Division	363	358	379	391	423	436	467	475	506
Graduate	56	63	71	72	79	81	89	90	99
Political Science									
Lower Division	113	164	145	190	163	206	176	219	187
Upper Division	363	374	397	417	442	462	486	500	523
Graduate	148	125	117	111	110	113	114	119	120
Psychology									
Lower Division	150	194	182	216	200	233	216	247	227
Upper Division	497	531	515	555	546	597	588	640	630
Graduate	80	91	90	101	99	110	108	120	117
Quantitative Methods									
Lower Division	9	15	18	20	21	22	22	24	24
Upper Division	77	87	99	109	116	124	131	137	142
Graduate	16	18	19	21	23	23	24	26	28
Religious Studies									
Lower Division	9	11	10	11	9	12	9	10	9
Upper Division	17	18	16	19	17	20	18	19	17

NCHEMS STUDENT FLOW MODEL I-A

REPORT OF ENROLLMENTS BY MAJOR

TABLE 8 (continued)

MAJORS AND STUDENT LEVELS	1971-72 Spring (Actual)	1972-1973 Fall (Projected)	1972-1973 Spring (Projected)	1973-1974 Fall	1973-1974 Spring	1974-1975 Fall	1974-1975 Spring	1975-1976 Fall	1975-1976 Spring
Sociology									
Lower Division	127	207	218	258	255	284	277	301	292
Upper Division	783	810	844	921	962	1037	1072	1134	1162
Graduate	80	94	108	114	127	131	145	148	161
Speech									
Lower Division	37	40	39	42	41	44	43	44	45
Upper Division	222	208	217	201	217	210	228	221	240
Graduate	89	86	94	92	101	99	108	106	115
Theater									
Lower Division	81	96	79	96	79	101	83	104	87
Upper Division	133	141	153	155	164	164	173	174	183
Graduate	58	52	53	51	53	53	57	58	62
Undeclared									
Lower Division	578	820	659	909	731	975	783	1029	821
Upper Division	268	338	264	313	239	320	247	339	261
Graduate	253	583	593	700	664	756	705	786	723
Totals									
Lower Division	3020	4148	3664	4617	4024	4970	4314	5256	4566
Upper Division	9195	9764	9898	10757	10908	11793	11901	12714	12777
Graduate	3438	3768	3904	4079	4208	4414	4546	4769	4891
Grand Total	15653	17680	17466	19453	19140	21177	20761	22739	22234

CALIFORNIA STATE UNIVERSITY, FULLERTON - STUDENT FLOW PROJECTIONS

TABLE 9

Projection of Graduates by Field of Study

MAJORS AND STUDENT LEVELS	1972-73		1973-74		1974-75		1975-76	
	FALL	SPRING	FALL	SPRING	FALL	SPRING	FALL	SPRING
Accounting								
Baccalaureate	73	138	74	142	78	150	82	158
Masters	2	3	2	4	2	4	3	4
Anthropology								
Baccalaureate	24	46	25	49	28	54	30	59
Masters	4	6	5	6	6	7	7	8
Area Studies								
Baccalaureate	12	25	11	24	12	25	12	25
Art								
Baccalaureate	52	126	55	136	61	150	67	162
Masters	6	23	7	26	8	30	8	33
Biological Sciences								
Baccalaureate	49	97	54	106	57	113	61	121
Masters	7	13	7	14	8	16	9	17
Chemistry								
Baccalaureate	6	16	6	17	6	18	7	19
Masters	1	2	1	2	1	2	1	2
Communications								
Baccalaureate	40	85	45	94	49	102	53	110
Masters	2	5	3	5	3	6	3	6
Computer Science								
Baccalaureate	6	3	6	5	7	6	9	7
Earth Science								
Baccalaureate	4	9	6	11	6	11	7	12
Economics								
Baccalaureate	7	20	9	25	10	28	11	30
Masters	2	5	2	5	2	5	2	5

CALIFORNIA STATE UNIVERSITY, FULLERTON - STUDENT FLOW PROJECTIONS

TABLE 9 (continued)

Projection of Graduates by Field of Study

MAJORS AND STUDENT LEVELS	1972-73		1973-74		1974-75		1975-76	
	FALL	SPRING	FALL	SPRING	FALL	SPRING	FALL	SPRING
Education								
Masters	54	207	47	187	45	181	44	182
Engineering								
Baccalaureate	8	14	10	17	12	19	13	22
Masters	11	32	13	36	15	40	17	44
English								
Baccalaureate	78	172	87	196	100	222	111	243
Masters	10	34	11	39	13	43	14	47
Finance								
Baccalaureate	21	51	24	59	27	65	29	70
Masters	2	3	3	3	3	3	3	4
Foreign Language								
Baccalaureate	21	37	22	37	23	39	24	42
Masters	4	8	4	9	5	10	5	11
General Business								
Baccalaureate	17	49	16	46	16	48	17	51
Masters	24	30	26	33	29	36	31	40
Geography								
Baccalaureate	23	39	24	42	27	47	30	52
Masters	1	1	1	1	1	1	1	2
History								
Baccalaureate	78	173	96	207	112	237	125	259
Masters	8	22	10	28	12	34	14	38
Library Science								
Masters	5	20	6	24	7	29	8	35

CALIFORNIA STATE UNIVERSITY, FULLERTON - STUDENT FLOW PROJECTIONS TABLE 9 (continued)

Projection of Graduates by Field of Study

MAJORS AND STUDENT LEVELS	1972-73		1973-74		1974-75		1975-76	
	FALL	SPRING	FALL	SPRING	FALL	SPRING	FALL	SPRING
Linguistics								
Baccalaureate	4	7	4	7	3	6	3	6
Masters	1	1	1	1	1	1	1	1
Management								
Baccalaureate	63	109	69	121	77	133	84	144
Masters	6	9	8	11	9	12	10	13
Marketing								
Baccalaureate	45	118	53	136	60	152	65	165
Masters	3	4	4	5	5	6	5	6
Math								
Baccalaureate	9	22	10	24	11	26	11	28
Masters	1	4	1	5	2	5	2	6
Music								
Baccalaureate	14	35	14	35	14	36	15	38
Masters	4	6	4	7	4	7	4	7
Philosophy								
Baccalaureate	6	20	6	20	6	22	6	24
Physics								
Baccalaureate	3	4	3	4	3	4	3	4
Physical Education								
Baccalaureate	43	75	46	81	51	91	56	99
Masters	3	3	3	3	3	4	4	4
Political Science								
Baccalaureate	41	103	46	114	51	127	56	137
Masters	6	12	6	11	6	11	6	12

CALIFORNIA STATE UNIVERSITY, FULLERTON - STUDENT FLOW PROJECTIONS TABLE 9 (continued)

Projection of Graduates by Field of Study

MAJORS AND STUDENT LEVELS	1972-73		1973-74		1974-75		1975-76	
	FALL	SPRING	FALL	SPRING	FALL	SPRING	FALL	SPRING
Psychology								
Baccalaureate	50	122	51	125	55	135	59	145
Masters	3	6	3	7	3	8	4	8
Quantitative Methods								
Baccalaureate	11	15	13	17	15	20	17	22
Masters	2	2	2	3	2	3	3	3
Religious Studies								
Baccalaureate	2	2	3	2	3	3	3	2
Sociology								
Baccalaureate	96	185	105	205	120	232	133	255
Masters	7	10	8	11	9	13	10	14
Speech								
Baccalaureate	26	54	24	52	25	54	26	57
Masters	8	15	8	16	9	17	10	18
Theater								
Baccalaureate	15	38	17	42	18	44	19	46
Masters	4	8	4	8	4	9	5	9
Totals								
Baccalaureate	947	2009	1034	2198	1143	2419	1244	2614
Masters	191	494	200	510	217	543	234	579
Grand Totals	1138	2503	1234	2708	1360	2962	1478	3193

USES OF STUDENT FLOW PROJECTION DATA

I. Intra-institutional uses:

1. Enrollment forecasts for input to the program planning process (RRPM); investigation of "what if" questions related to admissions

2. Forecasts of trained manpower output from various programs

3. Assessment of relative "holding power" among programs

II. Inter-institutional uses:

1. Enrollment forecasts for statewide program planning

2. Forecasts of statewide and national trained manpower in various fields

3. Comparison of attrition rates and transfer rates among institutions

III. Limitations and concerns:

1. Forecasting student demand is dependent on many uncontrolled social and student variables. Will forecasts prove valid enough to be useful?

2. Unreliable student registration data may affect projections

EXPENDITURE VALIDATION AND PROGRAM BUDGET DEVELOPMENT USING THE RESOURCE REQUIREMENTS PREDICTION MODEL 1.6

INDUCED COURSE LOAD MATRIX

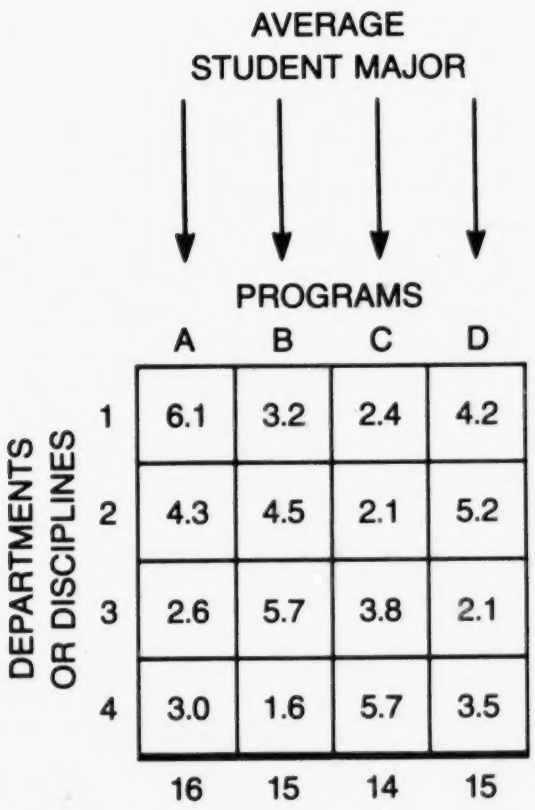


Figure 7

INDUCED COURSE LOAD MATRIX

One of the foundation blocks of a cost simulation model is an Induced Course Load Matrix (ICLM). This matrix displays the load induced on each discipline or department by an average major of each type. The hypothetical Induced Course Load Matrix displayed in Figure 7 shows the number of credit hours in each discipline or department taken by the average student enrolled in each of the degree programs of the institution. For example, the average type A major can be expected to take 6.1 credit hours in Discipline One, 4.3 credit hours in Discipline Two, 2.6 credit hours in Discipline Three, and 3.0 credit hours in Discipline Four. If one hundred type A majors are admitted to the institution, it can be readily ascertained that the load induced on Discipline One will be 610 credit hours; the resulting load in Discipline Two will be 430 credit hours, and so forth. Thus, any given set of enrollment projections may be multiplied down through the Induced Course Load Matrix to determine the total estimated credit hour load that will be demanded of each of the disciplines or departments in the institution.

FULLERTON INDUCED COURSE LOAD MATRIX (ICLM)

The Fullerton Induced Course Load Matrix was developed by means of the NCHEMS ICLM Generator. That software was used to read each student registration record for 1971-72 and total all semester credit hours in each discipline attempted by students in each field of study. The ICLM, as shown in Table 10, displays the credit hour load induced on each discipline by the average major of each type. The numbers in the cells represent semester credit hours attempted during the 1971-72 academic year. An FTE student was defined as taking 30 semester credit hours throughout all levels and fields of study in the institution.

ICLM -- 1971-72 -- CALIFORNIA STATE UNIVERSITY, FULLERTON (SELECTED MAJORS)

FTE Majors -- Lower Division Students Taking Courses at All Levels - Semester Credit Hours Attempted

Majors / Depts.	Acct.	Art	Bio. Sci.	Chem.	Eng.	Geog.	Hist.	Mgmt.	Math	Psych.
Accounting	3.55	.02	.15	.25	.09	.17	.13	1.19	.38	.13
Am. Studies	.09	.21	.17	0.0	.35	.50	.30	.13	.21	.31
Anthro.	.45	.87	.74	.08	1.02	1.17	1.07	.44	.55	1.57
Art	.32	10.00	.25	.25	.59	.83	.54	.56	.55	.78
Bio. Sci.	1.48	1.60	5.14	1.17	1.30	1.83	1.44	1.77	1.01	1.71
Chemistry	1.58	.79	5.28	8.14	.98	.72	1.26	1.73	1.84	.98
Communica.	.36	.55	.42	.14	.40	.28	.41	.77	.40	.39
Dance	0.0	.08	0.0	0.0	.03	0.0	.05	0.0	.02	.09
Ed-Sci/Math	.67	1.27	.30	.47	1.15	1.83	1.22	.60	.48	.78
Economics	3.65	.19	.54	.50	.26	.33	.53	3.42	.89	.38
Education	.05	.28	.14	0.0	.34	0.0	.24	.02	.10	.43
Engineering	.06	.05	.37	.03	.03	0.0	0.0	.13	.25	.05
English	1.86	2.74	1.84	1.42	9.61	1.67	3.38	1.94	2.17	2.62
Eth. St-Afr.	.36	.77	.09	0.0	.19	.39	.38	.06	.10	.51
Eth. St-Chic.	.05	.21	.07	0.0	.03	0.0	.43	.06	0.0	.31
Finance	.73	0.0	.01	.08	.03	0.0	.02	.56	0.0	.02
For. Lang.	.32	.74	1.42	1.97	1.92	1.11	1.25	.27	1.75	.93
Geography	.82	.53	.82	.92	.91	11.39	1.11	1.00	.75	.66
Health-PE	.59	1.00	.98	.56	.80	.61	.87	.94	.72	.74
History	1.50	1.73	2.02	1.75	2.22	2.00	7.73	2.13	2.14	2.08
Interdisc.	.14	.19	.11	.17	.15	.67	.21	.44	.21	.67
Library	0.0	0.0	.02	0.0	0.0	0.0	.04	0.0	0.0	0.0
Linguistics	0.0	0.0	.01	0.0	0.0	0.0	.06	0.0	.03	0.0
Management	1.50	.05	.09	.08	.03	0.0	.04	2.44	.03	0.0
Marketing	1.23	.02	.05	0.0	0.0	0.0	.08	1.56	0.0	.02
Math	1.42	.45	2.43	4.97	.51	.17	.46	.48	6.82	1.56
Music	.86	1.18	.90	.75	1.05	1.11	1.01	.81	.67	.90
Philosophy	.73	.94	.73	.17	.88	0.0	1.13	.88	1.07	1.16
Physics	.17	.05	.77	3.67	.26	.17	.29	.13	2.55	.25
Political Sci.	1.23	.84	1.45	.83	1.13	1.17	1.35	1.06	1.07	1.05
Psychology	1.09	1.03	1.17	1.08	1.30	.50	1.26	1.00	1.31	6.34
Quant. Meth.	1.09	.02	.02	.17	0.0	.22	.01	1.19	.66	.01
Religious St.	.05	.49	.22	0.0	.35	0.0	.21	.19	.28	.49
Sociology	.64	.47	.59	.17	.85	.17	.69	.75	.21	1.12
Speech	.95	.53	.37	.08	.82	.17	.60	1.25	.28	.60
Theater	.23	.14	.29	.17	.44	0.0	.28	.19	.36	.29

Table 10

All Course Levels

ICLM -- 1971-72 -- CALIFORNIA STATE UNIVERSITY, FULLERTON (SELECTED MAJORS)

FTE Majors -- Upper Division Students Taking Courses at All Levels - Semester Credit Hours Attempted

Majors / Depts	Acct.	Art	Bio. Sci.	Chem.	Eng.	Geog.	Hist.	Mgmt.	Math	Psych.
Accounting	8.32	.01	.12	.19	.05	.09	.12	1.29	.82	.12
Am. Studies	.07	.15	.10	0.0	.11	.05	.23	.03	0.0	.11
Anthro.	.27	.72	.61	.29	.50	.98	.99	.40	.41	.98
Art	.16	20.20	.20	.11	.46	.20	.31	.14	.29	.22
Bio. Sci.	.73	.68	13.16	3.05	.45	.54	.55	.63	.34	.84
Chemistry	.19	.21	4.57	10.70	.18	.13	.16	.14	.84	.21
Communica.	.66	.47	.31	.03	.50	.57	.36	.89	.26	.27
Dance	0.0	.06	.01	0.0	.05	0.0	.04	0.0	0.0	.03
Ed-Sci/Math	.26	.69	.19	.59	.94	1.34	.66	.23	2.60	.42
Economics	2.96	.07	.26	.46	.08	.16	.22	2.93	.63	.15
Education	.11	1.15	.44	.13	2.47	1.20	2.48	.20	1.06	1.71
Engineering	.01	.02	.05	.24	0.0	.05	.02	.02	.15	.03
English	.39	1.31	.47	.90	18.34	.84	2.36	.34	.73	1.29
Eth. St-Afr.	.07	.07	.03	0.0	.07	.07	.19	.04	.06	.15
Eth. St-Chic.	.05	.08	.06	0.0	.10	0.0	.12	.11	.35	.21
Finance	2.58	.03	.02	0.0	.04	.07	.04	2.53	.09	.04
For. Lang.	.10	.36	1.41	2.70	.85	.45	.58	.07	.99	.36
Geography	.35	.27	.28	.38	.18	18.02	1.02	.33	.35	.22
Health-PE	.34	.55	.70	.49	.44	1.23	1.02	.34	.69	.59
History	.31	.27	.43	.33	.96	1.34	14.58	.36	.28	.58
Interdisc.	.06	.31	.54	.43	.38	.26	.20	.17	.13	1.22
Library	.04	.05	.01	0.0	.09	.12	.09	.02	.03	.02
Linguistics	.01	.01	.01	0.0	.12	0.0	.01	0.0	.03	.06
Management	3.77	.08	.11	.10	.06	.02	.16	8.96	.25	.17
Marketing	2.38	.02	.10	.10	.02	.02	.06	3.18	.03	.09
Math	.33	.04	1.59	3.30	.06	.13	.08	.19	12.24	.77
Music	.16	.37	.29	.33	.32	.03	.21	.10	.41	.22
Philosophy	.29	.35	.21	.52	.31	.16	.35	.27	.92	.71
Physics	.27	.09	1.64	2.35	.07	.12	.10	.14	2.20	.12
Political Sci.	.17	.27	.36	.33	.27	.68	.96	.35	.28	.29
Psychology	.17	.18	.63	.86	.27	.09	.16	.25	.57	14.56
Quant. Meth.	3.56	.01	.41	.43	.01	.07	.03	3.95	1.18	.09
Religious St.	.13	.21	.10	.05	.38	.21	.29	.09	.28	.62
Sociology	.31	.26	.33	.38	.40	.52	.89	.51	.38	2.14
Speech	.21	.12	.17	.14	.22	.02	.14	.57	.13	.24
Theater	.17	.27	.10	.05	.18	.19	.16	.28	.12	.12

Table 10 (Continued)

ICLM -- 1971-72 -- CALIFORNIA STATE UNIVERSITY, FULLERTON (SELECTED MAJORS)

FTE Majors -- Graduate Level Students Taking Courses at All Levels

Majors / Depts.	Acct.	Art	Bio. Sci.	Chem.	Eng.	Geog.	Hist.	Mgmt.	Math	Psych.
Accounting	14.45	.06	0.0	0.0	.04	0.0	.38	3.27	.23	.08
Am. Studies	0.0	.36	0.0	0.0	.19	0.0	.25	0.0	0.0	0.0
Anthro.	0.0	.06	.06	0.0	.04	1.64	1.17	.14	0.0	.25
Art	0.0	25.90	.41	0.0	.08	.82	.13	0.0	0.0	0.0
Bio. Sci.	0.0	0.0	23.16	1.82	0.0	0.0	.04	.05	0.0	.36
Chemistry	0.0	0.0	1.59	23.00	0.0	0.0	0.0	0.0	0.0	.22
Communica.	0.0	.26	.08	0.0	.37	0.0	.13	.27	0.0	.17
Dance	0.0	.16	0.0	0.0	.05	0.0	0.0	0.0	0.0	0.0
Ed-Sci/Math	0.0	.06	.98	1.09	.26	.55	.04	0.0	3.92	0.0
Economics	2.67	.06	0.0	.27	.04	.27	.21	2.73	0.0	0.0
Education	0.0	1.32	1.29	1.00	4.40	3.18	3.96	1.73	3.54	5.42
Engineering	0.0	0.0	0.0	0.0	.04	0.0	0.0	.41	0.0	0.0
English	0.0	.42	.12	.55	21.13	.27	1.35	.14	.23	.08
Eth. St-Afr.	0.0	0.0	0.0	0.0	.04	0.0	0.0	0.0	0.0	0.0
Eth. St-Chic.	0.0	0.0	.06	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Finance	2.67	0.0	.06	0.0	.04	0.0	0.0	2.59	0.0	0.0
For. Lang.	0.0	.10	.20	0.0	1.00	0.0	.45	0.0	.77	0.0
Geography	0.0	0.0	0.0	0.0	0.0	16.73	.34	1.05	0.0	0.0
Health-PE	0.0	.18	.06	0.0	.06	0.0	.13	.05	0.0	0.0
History	.53	.12	.02	0.0	.19	1.64	16.20	1.91	0.0	.33
Interdisc.	0.0	.36	.47	0.0	.42	.82	.34	.14	.69	2.17
Library	0.0	0.0	.06	0.0	.50	0.0	.34	0.0	0.0	0.0
Linguistics	0.0	.06	0.0	0.0	.08	0.0	.17	0.0	0.0	.08
Management	3.21	0.0	0.0	0.0	.04	0.0	.42	8.59	0.0	0.0
Marketing	2.67	.12	0.0	0.0	.04	0.0	.21	3.00	0.0	.08
Math	0.0	0.0	.45	1.09	0.0	0.0	0.0	.14	19.00	.11
Music	0.0	0.0	0.0	.27	.04	0.0	.06	.09	0.0	.08
Philosophy	0.0	.06	0.0	0.0	.08	0.0	.08	0.0	0.0	.08
Physics	0.0	0.0	.35	.82	0.0	0.0	.01	0.0	.23	0.0
Political Sci.	0.0	0.0	0.0	0.0	.08	1.36	1.31	.27	0.0	.17
Psychology	0.0	.18	.29	0.0	.08	0.0	.30	0.0	.23	16.47
Quant. Meth.	2.67	0.0	.37	0.0	0.0	.55	.18	2.86	2.15	.19
Religious St.	0.0	.06	.12	0.0	.04	0.0	.59	0.0	0.0	.42
Sociology	1.07	.06	0.0	0.0	.12	.27	.72	.41	0.0	2.33
Speech	0.0	0.0	0.0	0.0	.23	.27	.13	.14	0.0	.42
Theater	0.0	.06	0.0	0.0	.09	0.0	.04	0.0	0.0	0.0

Table 10 (Continued)

All Course Levels

COST SIMULATION MODELS

HOW DO THEY WORK?

(PHASE I)

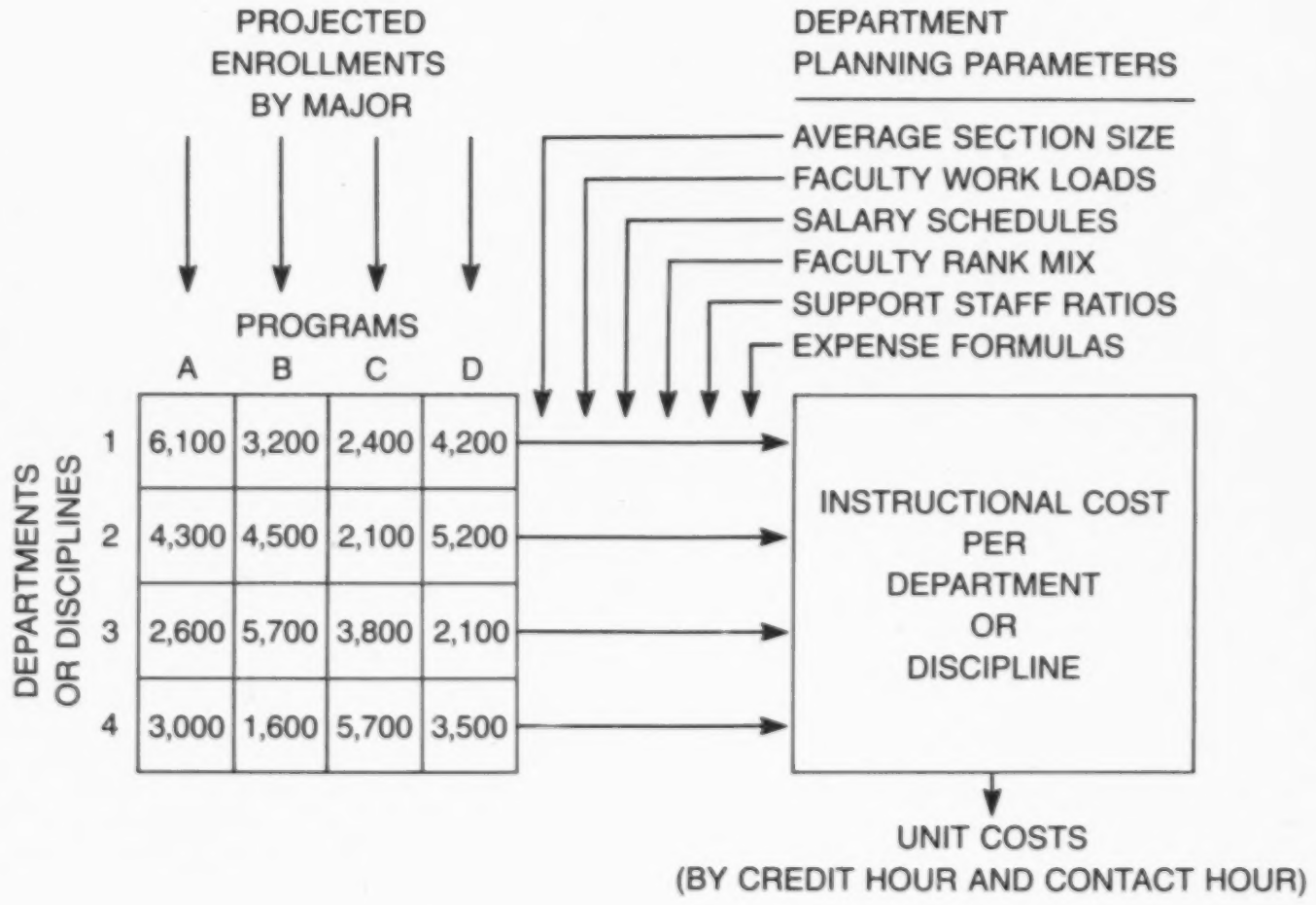


Figure 8

RESOURCE REQUIREMENTS PREDICTION MODEL (RRPM)

The beginning point for utilization of RRPM is the Induced Course Load Matrix. The complete ICLM data must be input to the model, along with enrollment forecasts by student level and field of study.

When projected enrollments have been multiplied through the Induced Course Load Matrix, as shown in Figure 8, the predicted credit hour demand in each discipline or department induced by each type of major is known. Summing across the matrix containing the credit hour loads induced by each type of major gives the total credit hours that a department must produce. Various planning parameters may then be input to describe how each department's instructional function will be operated. Parameters such as average section size, faculty workload, salary schedules, support staff ratios, and expense formulas have substantial resource implications. Once the department planning parameters are established and the student enrollments are known, the projected department costs are calculated. The cost per credit hour may then be derived within the model by dividing the total instructional cost of each department by the total credit hours to be produced.

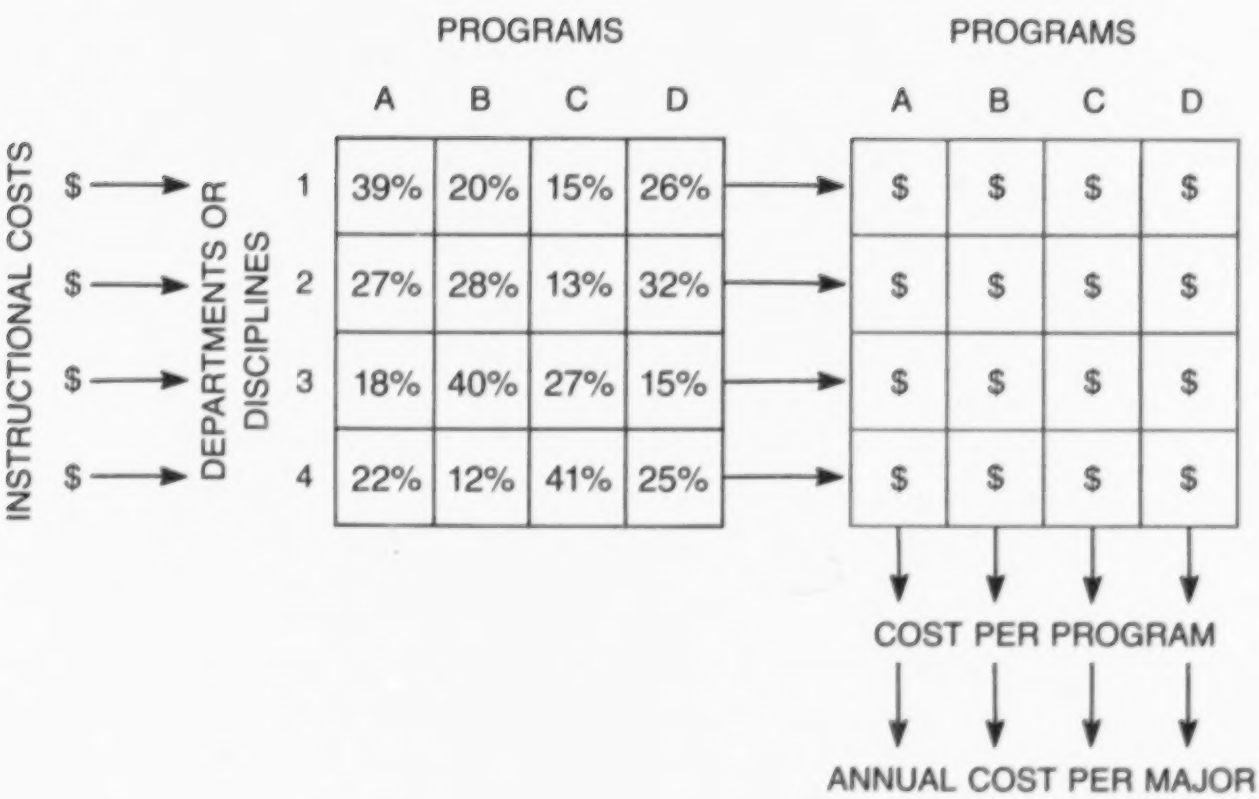

PROGRAMS
A B C D
PROGRAMS
A B C D
INSTRUCTIONAL COSTS
$
$
$
$
DEPARTMENTS OR DISCIPLINES
1 39% 20% 15% 26%
2 27% 28% 13% 32%
3 18% 40% 27% 15%
4 22% 12% 41% 25%
$ $ $ $
$ $ $ $
$ $ $ $
$ $ $ $
COST PER PROGRAM
ANNUAL COST PER MAJOR

Figure 9

RRPM -- DEVELOPMENT OF DEGREE PROGRAM COSTS

Once the instructional cost for each department is determined, a cost simulation model such as RRPM will proceed to distribute those department costs to the various degree programs in direct proportion to the number of credit hours drawn from each department by each degree program. The workload induced in a given department by majors in a specific type of program represents a percentage of the total workload of that department (see Figure 9). If the percentages for each department are added horizontally, they will equal 100 percent. Each percentage will represent a degree program's contribution to the total workload of a particular department. The instructional costs of each department may be distributed across the various programs in accordance with the derived percentages and placed in another matrix. The cost of each degree program is calculated by summing all the dollars in a column of this final matrix. Thus, the cost of degree program A is obtained by summing all the dollars in column A. The annual cost per major is a useful unit for comparing degree program costs and is obtained by dividing the total cost of a degree program by the number of majors.

This entire view of cost simulation models can be expanded from two dimensions to four dimensions. The expanded model handles student levels within degree programs (lower division, upper division, and graduate). Such an expanded model provides costs for each discipline at different levels of instruction and for each degree program at different levels of student major.

WHAT DOES A PROGRAM BUDGET LOOK LIKE?

INSTRUCTIONAL PROGRAMS	ANTICIPATED NUMBER OF STUDENT MAJORS	ANNUAL COST PER MAJOR	TOTAL DIRECT INSTRUCTIONAL COSTS
HISTORY			
LOWER DIVISION	228	$ 873	$199,044
UPPER DIVISION	186	1,096	203,856
GRADUATE	91	1,309	119,119
			$522,019

DEPARTMENT PLANNING
PARAMETER INFORMATION

AVERAGE SECTION SIZE
FACULTY WORK LOADS
FACULTY PRODUCTIVITY RATIOS
SALARY AND WAGE SCHEDULES
MIX OF FACULTY RANKS
RATIO OF SUPPORT STAFF TO FACULTY
EXPENSE FORMULAS

Figure 10

RRPM -- INSTRUCTIONAL PROGRAM BUDGET REPORT

A key output of RRPM is the information needed to construct an instructional program budget. A program budget can be constructed in a variety of formats; however, there are certain kinds of information that will almost always be included. The sample format shown in Figure 10 displays some hypothetical figures as the direct instructional costs for the history degree program at lower division, upper division, and graduate levels. The total direct instructional cost is a result of the annual cost per major and the anticipated number of majors. If these numbers are accurate, the total direct cost is an inevitable consequence. Thus, any negotiation or justification pertaining to a program budget must center on the number of students to be admitted and the annual cost per major. The number of students may be set by policy or, if not limited, predicted by a student flow model. The annual cost per major is a consequence of planning parameter decisions (displayed as back-up information in a program budget). Once it is determined what the average section size, faculty workload, salary schedule, expense formulas, etc., will be, and the number of students is known, the annual cost per major and total cost of each degree program are calculated by means of a cost simulation model such as RRPM.

When the costs used to prepare a program budget are deemed reasonable and valid, yet not enough funds are available for all desirable programs, institutional priorities must be established. The anticipated outputs or benefits of the various programs must be compared and weighed against costs in order to establish which programs will be diminished or nourished.

A program budget is not a panacea. It cannot be expected to make decision making easier. Rather, it displays resource requirements in relation to output-generating programs and provides greater insight into what we are buying with our educational expenditures.

RRPM VALIDATION AT FULLERTON

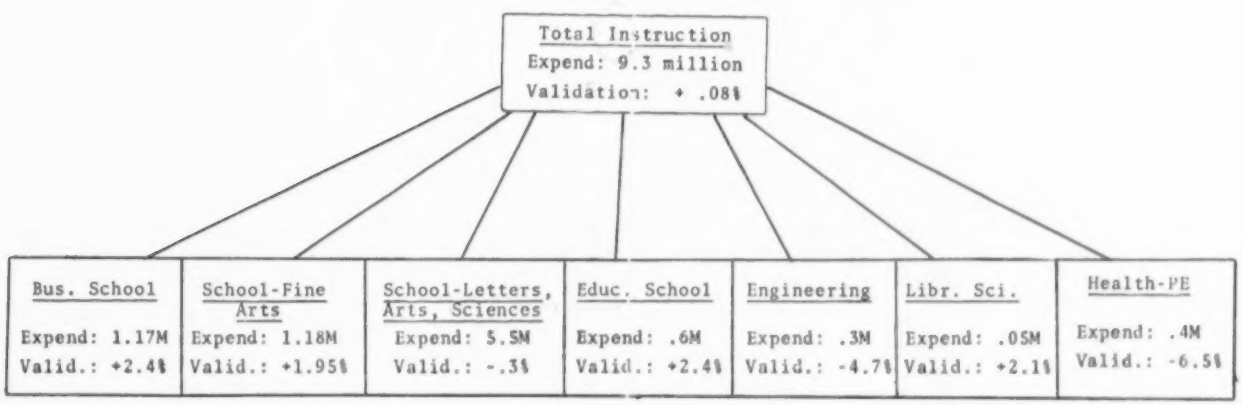
The RRPM was run first with historical data gathered from the Fullerton operational data systems. The initial objective was to validate the model outputs against the known numbers of faculty, support staff, and expenditures for the 1971-72 academic year. While validating the model, historical degree program costs and annual cost per major were also generated.

After the RRPM was run in such a manner so as to calculate accurately the actual number of employees and expenditures for each discipline in 1971-72, it was deemed ready for use in analyzing the resource implications of alternative plans for future operations.

The 1971-72 RRPM validation reports are shown on the following pages. It should be noted that the instructional costs displayed are only direct costs--including faculty salaries, staff wages, departmental administration, and such operating expenses as travel, supplies, and minor equipment. The validation reports are in two parts: (1) a program budget report that links resources to degree programs and (2) a traditional line-item budget report that links the same instructional resources to the instructional departments. The line-item budget report also displays some of the key planning parameters for each department. A departmental parameter of significant interest is the Productivity Ratio. The Productivity Ratios display the number of credit hours produced per FTE faculty teaching at lower division, upper division and graduate course levels in each department.

It can be noted from the diagram presented below that the total 1971-72 direct expenditures that passed through the Fullerton accounting system under instructional accounts were $9,319,055. The RRPM validation run calculated the direct instructional expense at $9,326,307. Thus, the model was able to match actual expenditures across all instructional departments within .08%.

Also displayed below are the validation data related to the various schools within the institution. Several individual departments showed significant variance between the RRPM calculations and actual expenditures. However, it was recognized that some borrowing and lending of staff occurs across departmental lines within schools and since the schools were validated reasonably well, individual departments were of less concern. During preparation of RRPM input data at Fullerton, faculty and staff were counted in relation to the location of their activity rather than where they were budgeted. Examination of the RRPM Validation Run Reports shows that twenty-four departments were validated within five percent of their actual expenditures and eighteen of these were within three percent. The Health and Physical Education Department shows a wide variance between RRPM calculations and actual expenditures. This is due to certain athletic and intramural expenses being carried within that department budget.



PROGRAM BUDGET REPORT

PROGRAM COSTS

INSTRUCTIONAL PROGRAM	COST PER STUDENT	NUMBER OF STUDENTS	PROGRAM COSTS
ACCOUNTING			
LOWER	647.63	66	42,743.58
UPPER	677.99	448	303,739.52
GRADUATE	746.60	6	4,479.60
** TOTALS **	674.93	520	350,962.70
ANTHROPOL			
LOWER	597.28	38	22,696.64
UPPER	623.46	172	107,235.12
GRADUATE	1,007.39	17	17,125.63
** TOTALS **	647.83	227	147,057.39
AREA STUDY			
LOWER	652.17	27	17,608.59
UPPER	693.16	122	84,565.52
** TOTALS **	685.73	149	102,174.11
ART			
LOWER	658.51	128	84,289.28
UPPER	801.31	434	347,768.54
GRADUATE	1,270.28	50	63,514.00
** TOTALS **	809.76	612	495,571.82
BIOLG SCI			
LOWER	792.07	244	193,265.08
UPPER	1,136.23	333	378,364.59
GRADUATE	2,294.82	51	117,035.82
** TOTALS **	1,096.60	628	688,665.49
CHEMISTRY			
LOWER	1,080.97	36	38,914.92
UPPER	1,431.89	63	90,209.07
GRADUATE	3,518.07	11	38,698.77
** TOTALS **	1,525.66	110	167,822.76
COMMUNICAT			
LOWER	645.83	103	66,520.49
UPPER	604.54	268	162,016.72
GRADUATE	1,243.28	24	29,838.72
** TOTALS **	654.12	395	258,375.93

PROGRAM BUDGET REPORT

PROGRAM COSTS

INSTRUCTIONAL PROGRAM	COST PER STUDENT	NUMBER OF STUDENTS	PROGRAM COSTS
COMPUT SC			
LOWER	780.25	14	10,923.50
UPPER	812.72	23	18,692.56
** TOTALS **	800.43	37	29,616.06
EARTH SCI			
LOWER	899.66	11	9,896.26
UPPER	1,058.86	27	28,589.22
** TOTALS **	1,012.78	38	38,485.48
ECON			
LOWER	666.51	16	10,664.16
UPPER	695.39	50	34,769.50
GRADUATE	1,159.90	13	15,078.70
** TOTALS **	765.98	79	60,512.36
EDUCATION			
GRADUATE	990.56	331	327,875.36
** TOTALS **	990.56	331	327,875.36
ENGINEERIN			
LOWER	999.11	88	87,921.68
UPPER	1,582.97	150	237,445.50
GRADUATE	2,008.90	48	96,427.20
** TOTALS **	1,474.81	286	421,794.38
ENGLISH			
LOWER	664.44	205	136,210.20
UPPER	770.76	554	427,001.04
GRADUATE	1,132.82	78	88,359.96
** TOTALS **	778.46	837	651,571.20
FINANCE			
LOWER	721.99	9	6,497.91
UPPER	676.78	115	78,506.48
GRADUATE	1,222.88	7	8,560.16
** TOTALS **	708.82	132	93,564.55

PROGRAM BUDGET REPORT

PROGRAM COSTS

INSTRUCTIONAL PROGRAM	COST PER STUDENT	NUMBER OF STUDENTS	PROGRAM COSTS
FOR LANG			
LOWER	687.86	98	67,410.28
UPPER	840.40	148	124,379.20
GRADUATE	992.29	28	27,784.12
** TOTALS **	801.36	274	219,573.60
GEN BUS			
LOWER	654.50	124	81,158.00
UPPER	671.46	304	204,123.84
GRADUATE	1,186.75	91	107,994.25
** TOTALS **	757.76	519	393,276.09
GEOGRAPHY			
LOWER	592.02	18	10,656.36
UPPER	691.29	128	88,485.12
GRADUATE	927.51	11	10,202.61
** TOTALS **	696.46	157	109,344.09
HISTORY			
LOWER	635.71	160	101,713.60
UPPER	745.87	545	406,499.15
GRADUATE	849.41	71	60,308.11
** TOTALS **	732.63	776	568,520.86
LIBRARY SC			
GRADUATE	713.56	70	49,949.20
** TOTALS **	713.56	70	49,949.20
LINGUISTIC			
LOWER	823.56	14	11,529.84
UPPER	947.66	21	19,900.86
GRADUATE	1,183.46	12	14,201.52
** TOTALS **	970.90	47	45,632.22
MANAGEMENT			
LOWER	642.77	48	30,852.96
UPPER	685.29	362	248,074.98
GRADUATE	1,131.21	22	24,886.62
** TOTALS **	703.27	432	303,814.56

RESOURCE REQUIREMENTS PREDICTION MODEL
FULLERTON

PROGRAM BUDGET REPORT

PROGRAM COSTS

INSTRUCTIONAL PROGRAM	COST PER STUDENT	NUMBER OF STUDENTS	PROGRAM COSTS
MARKETING			
LOWER	669.26	22	14,723.72
UPPER	672.97	263	176,991.11
GRADUATE	1,166.37	9	10,497.33
** TOTALS **	687.80	294	202,212.16
MATH			
LOWER	813.53	87	70,777.11
UPPER	1,001.67	95	95,158.65
GRADUATE	1,851.16	13	24,065.08
** TOTALS **	974.36	195	190,000.84
MUSIC			
LOWER	940.12	122	114,694.64
UPPER	1,263.76	159	200,937.84
GRADUATE	2,075.65	18	37,361.70
** TOTALS **	1,180.58	299	352,994.18
PHILOSOPHY			
LOWER	616.38	10	6,163.80
UPPER	730.07	63	45,994.41
** TOTALS **	714.50	73	52,158.21
PHYSICS			
LOWER	1,006.89	21	21,144.69
UPPER	1,279.74	32	40,951.68
** TOTALS **	1,171.63	53	62,096.37
PHYS ED			
LOWER	732.42	76	55,663.92
UPPER	841.39	318	267,562.02
GRADUATE	1,281.68	22	28,196.96
** TOTALS **	844.77	416	351,422.90
POLIT SCI			
LOWER	664.04	120	79,684.80
UPPER	696.29	306	213,064.74
GRADUATE	1,243.62	58	72,129.96
** TOTALS **	753.88	484	364,879.50

PROGRAM BUDGET REPORT

PROGRAM COSTS

INSTRUCTIONAL PROGRAM	COST PER STUDENT	NUMBER OF STUDENTS	PROGRAM COSTS
PSYCHOLOGY			
LOWER	641.88	134	86,011.92
UPPER	690.96	380	262,564.80
GRADUATE	1,135.05	36	40,861.80
** TOTALS **	708.07	550	389,438.52
QUANT METH			
LOWER	673.88	8	5,391.04
UPPER	733.93	56	41,100.08
GRADUATE	925.67	5	4,628.35
** TOTALS **	740.86	69	51,119.47
RELIG ST			
LOWER	616.89	5	3,084.45
UPPER	585.86	9	5,272.74
** TOTALS **	596.94	14	8,357.19
SOCIOLOGY			
LOWER	626.69	121	75,829.49
UPPER	631.66	591	373,311.06
GRADUATE	913.39	38	34,708.82
** TOTALS **	645.13	750	483,849.37
SPEECH			
LOWER	729.69	30	21,890.70
UPPER	945.81	160	151,329.60
GRADUATE	1,434.21	40	57,368.40
** TOTALS **	1,002.56	230	230,588.70
THEATER			
LOWER	904.19	68	61,484.92
UPPER	1,193.07	111	132,430.77
GRADUATE	1,421.97	26	36,971.22
** TOTALS **	1,126.28	205	230,886.91
UNDECLARED			
LOWER	680.09	666	452,939.94
UPPER	736.70	233	171,651.10
GRADUATE	1,007.67	206	207,580.02
** TOTALS **	753.10	1,105	832,171.06

RESOURCE REQUIREMENTS PREDICTION MODEL
FULLERTON

PROGRAM BUDGET REPORT

PROGRAM COSTS

INSTRUCTIONAL PROGRAM	COST PER STUDENT	NUMBER OF STUDENTS	PROGRAM COSTS
**** TOTALS ****			
LOWER	715.34	2,937	2,100,958.47
UPPER	790.56	7,044	5,568,687.13
GRADUATE	1,173.29	1,412	1,656,689.99
** TOTALS **	818.60	11,393	9,326,335.59

RESOURCE REQUIREMENTS PREDICTION MODEL
FULLERTON

PLANNING PARAMETERS REPORT

DEPARTMENTAL UNIT COST

ACCOUNTING

COURSE LEVEL	CHAIRMAN	FACULTY	STAFF	EXPENSES	ADDT	TOTAL	PROD. RATIO	UNITS	UNIT COST
LOWER	3,294	48,509	5,015	1,396		58,214	718.41	2,888	20.15
UPPER	5,392	91,893	8,209	2,287		107,781	737.23	4,851	22.21
GRADUATE	917	19,249	1,397	387		21,950	358.93	402	54.60
TOTAL DOLLARS	9,603	159,651	14,621	4,070		187,945	694.62	8,141	23.09
TOTAL PERSONNEL	.50	11.72	2.11			14.33			

AMER STUDY

COURSE LEVEL	CHAIRMAN	FACULTY	STAFF	EXPENSES	ADDT	TOTAL	PROD. RATIO	UNITS	UNIT COST
LOWER	589	6,001	522	433		7,545	2,246.51	966	7.81
UPPER	2,277	21,917	2,018	1,681		27,893	933.73	1,550	17.99
TOTAL DOLLARS	2,866	27,918	2,540	2,114		35,438	1,203.83	2,516	14.09
TOTAL PERSONNEL	.20	2.09	.31			2.60			

ANTHRO

COURSE LEVEL	CHAIRMAN	FACULTY	STAFF	EXPENSES	ADDT	TOTAL	PROD. RATIO	UNITS	UNIT COST
LOWER	1,380	38,521	2,538	1,591		44,030	1,381.12	4,682	9.40
UPPER	3,946	111,943	7,256	4,549		127,694	674.51	6,536	19.53
GRADUATE	407	11,785	748	465		13,405	322.00	322	41.63
TOTAL DOLLARS	5,733	162,249	10,542	6,605		185,129	819.60	11,540	16.04
TOTAL PERSONNEL	.40	14.08	1.55			16.03			

ART

COURSE LEVEL	CHAIRMAN	FACULTY	STAFF	EXPENSES	ADDT	TOTAL	PROD. RATIO	UNITS	UNIT COST
LOWER	1,809	80,183	9,034	7,167		98,193	720.97	5,227	18.78
UPPER	4,477	230,645	22,358	17,739		275,220	504.29	9,047	30.42
GRADUATE	823	44,672	4,112	3,260		52,867	290.61	959	55.12
TOTAL DOLLARS	7,109	355,501	35,504	28,166		426,280	534.68	15,233	27.98
TOTAL PERSONNEL	.45	28.49	4.55			33.49			

BIO SCI

COURSE LEVEL	CHAIRMAN	FACULTY	STAFF	EXPENSES	ADDT	TOTAL	PROD. RATIO	UNITS	UNIT COST
LOWER	2,685	89,799	18,878	23,402		134,764	1,146.65	8,898	15.14
UPPER	4,889	177,204	34,374	42,612		259,079	468.37	6,618	39.14
GRADUATE	1,844	68,476	12,965	16,071		99,356	154.60	824	120.57
TOTAL DOLLARS	9,418	335,479	66,217	82,085		493,199	600.29	16,340	30.18
TOTAL PERSONNEL	.69	27.22	8.71			36.62			

CHEMISTRY

COURSE LEVEL	CHAIRMAN	FACULTY	STAFF	EXPENSES	ADDT	TOTAL	PROD. RATIO	UNITS	UNIT COST
LOWER	4,266	122,070	42,215	40,621		209,172	700.10	6,735	31.05
UPPER	4,292	119,607	42,478	40,875		207,252	274.48	2,657	78.00
GRADUATE	727	22,289	7,196	6,923		37,135	122.56	201	184.75
TOTAL DOLLARS	9,285	263,966	91,889	88,419		453,559	458.12	9,593	47.28

RESOURCE REQUIREMENTS PREDICTION MODEL
FULLERTON

PLANNING PARAMETERS REPORT

DEPARTMENTAL UNIT COST

COMM

COURSE LEVEL	CHAIRMAN	FACULTY	STAFF	EXPENSES	ADDT	TOTAL	PROD. RATIO	UNITS	UNIT COST
LOWER	3,482	52,424	5,928	9,178		71,012	775.26	3,729	19.04
UPPER	6,095	96,290	10,377	16,069		128,831	897.03	7,553	17.05
GRADUATE	897	13,876	1,527	2,364		23,664	253.23	314	75.36
TOTAL DOLLARS	10,474	167,590	17,832	27,611		223,507	801.38	11,596	19.27
TOTAL PERSONNEL	.55	14.47	2.31			17.33			

DANCE

COURSE LEVEL	CHAIRMAN	FACULTY	STAFF	EXPENSES	ADDT	TOTAL	PROD. RATIO	UNITS	UNIT COST
LOWER	1,504	11,719	1,475	3,612		18,310	473.39	516	35.48
UPPER	1,655	15,978	1,623	3,977		23,233	250.83	301	77.18
TOTAL DOLLARS	3,159	27,697	3,098	7,589		41,543	356.77	817	50.85
TOTAL PERSONNEL	.20	2.29	.50			2.99			

ECONOMICS

COURSE LEVEL	CHAIRMAN	FACULTY	STAFF	EXPENSES	ADDT	TOTAL	PROD. RATIO	UNITS	UNIT COST
LOWER	3,425	74,863	3,623	1,786		84,097	768.44	4,626	18.17
UPPER	4,423	87,693	4,189	2,065		100,370	687.64	4,786	20.97
GRADUATE	1,232	28,640	1,167	574		31,613	255.15	495	63.86
TOTAL DOLLARS	9,480	193,196	8,979	4,425		216,080	664.01	9,907	21.81
TOTAL PERSONNEL	.63	14.92	1.19			16.74			

EDUCATION

COURSE LEVEL	CHAIRMAN	FACULTY	STAFF	EXPENSES	ADDT	TOTAL	PROD. RATIO	UNITS	UNIT COST
LOWER	524	12,413	1,022	615		14,574	601.83	656	22.21
UPPER	11,297	292,770	22,008	13,304		339,379	502.64	11,797	28.76
GRADUATE	8,154	236,965	15,884	9,601		270,604	453.66	7,685	35.21
TOTAL DOLLARS	19,975	542,148	38,914	23,520		624,557	485.25	20,138	31.01
TOTAL PERSONNEL	1.15	41.50	5.81			48.46			

ENGR

COURSE LEVEL	CHAIRMAN	FACULTY	STAFF	EXPENSES	ADDT	TOTAL	PROD. RATIO	UNITS	UNIT COST
LOWER	1,576	38,019	7,396	5,347		52,338	389.43	1,032	50.71
UPPER	7,691	168,366	36,089	26,100		238,246	285.15	3,687	64.61
GRADUATE	1,814	37,324	8,512	6,153		53,803	232.79	710	75.77
TOTAL DOLLARS	11,081	243,709	51,997	37,600		344,387	291.41	5,429	63.43
TOTAL PERSONNEL	.70	18.63	5.77			25.10			

ENGLISH

COURSE LEVEL	CHAIRMAN	FACULTY	STAFF	EXPENSES	ADDT	TOTAL	PROD. RATIO	UNITS	UNIT COST
LOWER	4,177	150,258	8,262	4,843		167,540	616.02	8,113	20.65
UPPER	11,958	506,182	23,653	13,869		555,662	561.64	21,174	26.24
GRADUATE	1,259	57,896	2,490	1,458		63,103	289.92	1,151	54.82
TOTAL DOLLARS	17,394	714,336	34,405	20,170		786,305	555.03	30,438	25.83
TOTAL PERSONNEL	1.20	54.84	4.94			60.98			

PLANNING PARAMETERS REPORT

DEPARTMENTAL UNIT COST

ETH ST AFR

COURSE LEVEL	CHAIRMAN	FACULTY	STAFF	EXPENSES	ADDT	TOTAL	PROD. RATIO	UNITS	UNIT COST
LOWER	1,010	19,255	2,874	790		23,929	410.73	727	32.91
UPPER	1,255	23,426	3,573	984		29,238	788.18	1,734	16.86
TOTAL DOLLARS	2,265	42,681	6,447	1,774		53,167	619.90	2,461	21.60
TOTAL PERSONNEL	.20	3.97	.99			5.16			

ETH ST CHI

COURSE LEVEL	CHAIRMAN	FACULTY	STAFF	EXPENSES	ADDT	TOTAL	PROD. RATIO	UNITS	UNIT COST
LOWER	1,416	23,944		850		26,210	508.70	1,053	24.89
UPPER	1,593	27,972		957		30,422	585.84	1,365	22.28
TOTAL DOLLARS	3,009	51,816		1,807		56,632	549.55	2,418	23.42
TOTAL PERSONNEL	.20	4.40	.00			4.60			

FINANCE

COURSE LEVEL	CHAIRMAN	FACULTY	STAFF	EXPENSES	ADDT	TOTAL	PROD. RATIO	UNITS	UNIT COST
UPPER	3,672	102,654	12,443	2,901		121,670	703.29	5,563	21.87
GRADUATE	552	18,386	1,872	433		21,243	293.28	349	60.86
TOTAL DOLLARS	4,224	121,040	14,315	3,334		142,913	649.67	5,912	24.17
TOTAL PERSONNEL	.22	9.10	2.00			11.32			

FOR LANG

COURSE LEVEL	CHAIRMAN	FACULTY	STAFF	EXPENSES	ADDT	TOTAL	PROD. RATIO	UNITS	UNIT COST
LOWER	5,346	138,814	14,727	5,376		164,263	601.72	7,359	22.32
UPPER	3,699	106,000	10,187	3,719		123,604	414.78	3,509	35.22
GRADUATE	559	16,521	1,541	561		19,182	378.91	485	39.55
TOTAL DOLLARS	9,603	261,335	26,455	9,656		307,049	516.75	11,353	27.05
TOTAL PERSONNEL	.50	21.97	3.08			25.55			

GEOGRAPHY

COURSE LEVEL	CHAIRMAN	FACULTY	STAFF	EXPENSES	ADDT	TOTAL	PROD. RATIO	UNITS	UNIT COST
LOWER	4,690	64,696	4,620	3,401		77,405	630.56	4,784	16.17
UPPER	4,413	69,699	4,348	3,199		80,659	639.11	3,464	23.28
GRADUATE	301	4,788	295	217		5,601	302.70	112	50.00
TOTAL DOLLARS	9,404	138,181	9,263	6,817		163,665	723.81	8,360	19.58
TOTAL PERSONNEL	.60	11.55	1.50			13.65			

HISTORY

COURSE LEVEL	CHAIRMAN	FACULTY	STAFF	EXPENSES	ADDT	TOTAL	PROD. RATIO	UNITS	UNIT COST
LOWER	1,585	79,034	4,935	3,081		88,635	1,210.53	7,590	11.67
UPPER	6,182	310,159	19,244	12,024		347,609	547.73	13,392	25.95
GRADUATE	366	21,853	1,141	710		24,070	494.48	717	33.57
TOTAL DOLLARS	8,133	411,046	25,320	15,815		460,314	674.51	21,699	21.21
TOTAL PERSONNEL	.60	32.17	3.54			36.31			

RESOURCE REQUIREMENTS PREDICTION MODEL
FULLERTON

PLANNING PARAMETERS REPORT

DEPARTMENTAL UNIT COST

INT DES ST

COURSE LEVEL	CHAIRMAN	FACULTY	STAFF	EXPENSES	ADDT	TOTAL	PROD. RATIO	UNITS	UNIT COST
LOWER		1,381		84		1,465	2,053.85	267	5.48
UPPER		71,115		3,485		74,600	812.95	4,268	17.47
GRADUATE							.00	35	.00
TOTAL DOLLARS		72,496		3,569		76,065	849.44	4,570	16.64
TOTAL PERSONNEL	.00	5.38	.00			5.38			

LIBRARY

COURSE LEVEL	CHAIRMAN	FACULTY	STAFF	EXPENSES	ADDT	TOTAL	PROD. RATIO	UNITS	UNIT COST
UPPER		5,196		520		5,714	1,259.46	466	12.26
GRADUATE		38,323		4,813		[illegible]	[illegible]	[illegible]	[illegible]
TOTAL DOLLARS		43,517		5,333		48,850	593.39	2,243	21.78
TOTAL PERSONNEL	.00	3.78	.00			3.78			

LINGUISTIC

COURSE LEVEL	CHAIRMAN	FACULTY	STAFF	EXPENSES	ADDT	TOTAL	PROD. RATIO	UNITS	UNIT COST
UPPER		27,227	2,000	1,692		30,919	303.65	665	46.49
GRADUATE		13,819	867	733		15,419	414.74	394	39.13
TOTAL DOLLARS		41,046	2,867	2,425		46,338	337.26	1,059	43.76
TOTAL PERSONNEL	.00	3.14	.35			3.49			

MANAGEMENT

COURSE LEVEL	CHAIRMAN	FACULTY	STAFF	EXPENSES	ADDT	TOTAL	PROD. RATIO	UNITS	UNIT COST
UPPER	7,468	207,641	16,148	7,269		238,526	633.21	10,467	22.78
GRADUATE	433	15,382	937	420		17,172	341.67	328	52.35
TOTAL DOLLARS	7,901	223,023	17,085	7,689		255,698	617.21	10,795	23.69
TOTAL PERSONNEL	.50	17.49	2.44			20.43			

MARKETING

COURSE LEVEL	CHAIRMAN	FACULTY	STAFF	EXPENSES	ADDT	TOTAL	PROD. RATIO	UNITS	UNIT COST
UPPER	4,676	149,083	8,462	4,532		166,753	679.45	7,705	21.64
GRADUATE	428	15,261	776	414		16,879	255.77	266	63.45
TOTAL DOLLARS	5,104	164,344	9,238	4,946		183,632	643.86	7,971	23.04
TOTAL PERSONNEL	.28	12.38	1.24			13.90			

MATH

COURSE LEVEL	CHAIRMAN	FACULTY	STAFF	EXPENSES	ADDT	TOTAL	PROD. RATIO	UNITS	UNIT COST
LOWER	7,580	172,372	11,354	5,021		196,327	497.34	6,545	29.99
UPPER	2,102	44,059	3,149	1,391		55,701	409.86	1,496	37.23
GRADUATE	460	13,848	690	302		15,300	180.00	144	106.25
TOTAL DOLLARS	10,142	235,279	15,193	6,714		267,328	464.79	8,185	32.66
TOTAL PERSONNEL	.60	17.61	2.11			20.32			

RESOURCE REQUIREMENTS PREDICTION MODEL
FULLERTON

PLANNING PARAMETERS REPORT

DEPARTMENTAL UNIT COST

MUSIC

COURSE LEVEL	CHAIRMAN	FACULTY	STAFF	EXPENSES	ADDT	TOTAL	PROD. RATIO	UNITS	UNIT COST
LOWER	6,215	157,958	31,515	17,845		213,533	431.09	5,768	37.02
UPPER	5,495	150,313	27,863	15,776		199,447	298.82	3,535	56.42
GRADUATE	627	20,198	3,179	1,797		25,801	177.78	240	107.50
TOTAL DOLLARS	12,337	328,469	62,557	35,418		438,781	359.30	9,543	45.98
TOTAL PERSONNEL	.82	26.56	7.70			35.08			

PHILOS

COURSE LEVEL	CHAIRMAN	FACULTY	STAFF	EXPENSES	ADDT	TOTAL	PROD. RATIO	UNITS	UNIT COST
LOWER	2,628	43,488	3,076	1,557		51,749	967.86	3,794	13.63
UPPER	4,053	60,508	3,437	1,740		69,738	588.36	2,577	27.06
TOTAL DOLLARS	7,681	103,996	6,513	3,297		121,487	767.59	6,371	19.07
TOTAL PERSONNEL	.40	8.30	1.00			9.70			

HEPER

COURSE LEVEL	CHAIRMAN	FACULTY	STAFF	EXPENSES	ADDT	TOTAL	PROD. RATIO	UNITS	UNIT COST
LOWER	3,582	115,799	19,605	21,884		160,870	573.89	5,802	27.72
UPPER	4,755	168,566	26,023	29,051		228,395	587.26	7,881	28.98
GRADUATE	588	24,281	3,218	3,591		31,678	335.54	557	56.87
TOTAL DOLLARS	8,925	308,646	48,846	54,526		420,943	565.30	14,240	29.56
TOTAL PERSONNEL	.65	25.19	6.55			32.39			

PHYSICS

COURSE LEVEL	CHAIRMAN	FACULTY	STAFF	EXPENSES	ADDT	TOTAL	PROD. RATIO	UNITS	UNIT COST
LOWER	4,748	95,285	33,441	30,609		164,083	378.74	2,655	61.80
UPPER	2,567	53,769	18,080	16,547		90,963	456.99	1,732	52.51
GRADUATE							.00	9	.00
TOTAL DOLLARS	7,315	149,054	51,521	47,156		255,046	407.04	4,396	58.02
TOTAL PERSONNEL	.40	10.80	5.51			16.71			

POL SCI

COURSE LEVEL	CHAIRMAN	FACULTY	STAFF	EXPENSES	ADDT	TOTAL	PROD. RATIO	UNITS	UNIT COST
LOWER	1,375	38,247	2,579	1,469		43,670	1,115.32	3,714	11.75
UPPER	6,206	190,545	11,643	6,638		215,032	603.99	9,078	23.68
GRADUATE	1,449	46,351	2,719	1,547		52,066	250.43	879	59.23
TOTAL DOLLARS	9,030	275,143	16,941	9,654		310,768	625.10	13,671	22.73
TOTAL PERSONNEL	.60	21.87	2.41			24.88			

PSYCHOLOGY

COURSE LEVEL	CHAIRMAN	FACULTY	STAFF	EXPENSES	ADDT	TOTAL	PROD. RATIO	UNITS	UNIT COST
LOWER	2,779	83,258	6,998	11,719		104,754	755.15	5,135	20.40
UPPER	5,212	149,768	13,122	21,976		190,078	666.90	8,503	22.35
GRADUATE	609	23,949	1,533	2,565		28,656	327.52	488	58.72
TOTAL DOLLARS	8,600	256,975	21,653	36,260		323,488	671.39	14,126	22.90
TOTAL PERSONNEL	.60	21.04	2.94			24.58			

RESOURCE REQUIREMENTS PREDICTION MODEL
FULLERTON

PLANNING PARAMETERS REPORT

DEPARTMENTAL UNIT COST

RELIG STUD

COURSE LEVEL	CHAIRMAN	FACULTY	STAFF	EXPENSES	ADDT	TOTAL	PROD. RATIO	UNITS	UNIT COST
LOWER	548	8,084	426	191		9,249	436.54	227	40.74
UPPER	2,935	41,838	2,278	1,034		48,085	996.04	2,769	17.36
TOTAL DOLLARS	3,483	49,922	2,704	1,225		57,334	907.88	2,996	19.14
TOTAL PERSONNEL	.20	3.30	.33			3.83			

SCI/MATH ED

COURSE LEVEL	CHAIRMAN	FACULTY	STAFF	EXPENSES	ADDT	TOTAL	PROD. RATIO	UNITS	UNIT COST
LOWER	5,191	98,847	8,887	12,914		125,839	544.38	4,502	27.95
UPPER	4,136	79,014	7,082	10,290		100,522	355.99	2,346	42.84
GRADUATE	106	1,888	182	263		2,439	682.35	116	21.02
TOTAL DOLLARS	9,433	179,749	16,151	23,467		228,800	463.34	6,964	32.85
TOTAL PERSONNEL	.55	15.03	2.10			17.68			

SPEECH COM

COURSE LEVEL	CHAIRMAN	FACULTY	STAFF	EXPENSES	ADDT	TOTAL	PROD. RATIO	UNITS	UNIT COST
LOWER	2,970	62,282	5,248	3,511		74,012	512.31	2,956	25.03
UPPER	5,636	143,921	9,961	6,665		166,083	422.56	4,627	35.89
GRADUATE	1,348	38,624	2,383	1,593		43,948	264.12	692	63.50
TOTAL DOLLARS	9,954	244,728	17,592	11,769		284,043	427.87	8,275	34.33
TOTAL PERSONNEL	.60	19.34	2.52			22.46			

SOCIOLOGY

COURSE LEVEL	CHAIRMAN	FACULTY	STAFF	EXPENSES	ADDT	TOTAL	PROD. RATIO	UNITS	UNIT COST
LOWER	1,224	42,373	3,394	2,578		49,569	870.53	3,308	14.98
UPPER	5,678	202,778	15,739	11,960		236,155	754.09	13,287	17.77
GRADUATE	654	24,063	1,813	1,376		27,906	383.74	779	35.82
TOTAL DOLLARS	7,556	269,214	20,946	15,914		313,630	740.90	17,374	18.05
TOTAL PERSONNEL	.60	23.45	3.05			27.10			

QUANT METH

COURSE LEVEL	CHAIRMAN	FACULTY	STAFF	EXPENSES	ADDT	TOTAL	PROD. RATIO	UNITS	UNIT COST
LOWER	2,484	68,600	7,164	2,507		80,755	613.32	3,453	23.38
UPPER	3,834	107,561	11,059	3,872		126,326	545.91	4,744	26.62
GRADUATE	317	9,941	916	319		11,493	405.56	292	39.35
TOTAL DOLLARS	6,635	186,102	19,139	6,698		218,574	564.43	8,489	25.75
TOTAL PERSONNEL	.40	15.04	2.55			17.99			

THEATER

COURSE LEVEL	CHAIRMAN	FACULTY	STAFF	EXPENSES	ADDT	TOTAL	PROD. RATIO	UNITS	UNIT COST
LOWER	1,693	54,357	14,245	8,532		79,327	464.51	2,225	35.65
UPPER	3,781	124,895	31,820	19,063		181,559	356.45	3,814	47.60
GRADUATE	258	9,221	2,170	1,298		12,947	367.12	268	48.30
TOTAL DOLLARS	5,732	190,973	48,235	28,893		273,833	388.84	6,307	43.42
TOTAL PERSONNEL	.47	16.22	5.68			22.32			

RESOURCE REQUIREMENTS PREDICTION MODEL
FULLERTON

PLANNING PARAMETERS REPORT

DEPARTMENTAL UNIT COST

**** TOTALS ****

COURSE LEVEL	CHAIRMEN	FACULTY	STAFF	EXPENSES	ADDT	TOTAL	PROD. RATIO	UNITS	UNIT COST
LOWER	87,175	2,093,352	240,996	233,910		2,695,433	681.81	120,013	22.46
UPPER	157,739	4,565,494	472,293	372,412		5,548,438	556.17	199,661	27.79
GRADUATE	27,129	902,369	82,230	70,208		1,082,436	340.13	22,197	48.76
TOTAL DOLLARS	272,043	7,562,215	835,519	676,530		9,326,307	569.53	341,871	27.28
TOTAL PERSONNEL	17.24	600.27	107.81			725.32			

AN RRPM PROJECTION FOR FULLERTON

Having validated the RRPM against 1971-72 actual expenditure data and known departmental parameters, Fullerton administrators were prepared to investigate alternative plans for future operation. The first "what if" question posed at Fullerton was: What would be the resource consequences if enrollments went up in 1973-74 as predicted by the Student Flow Model and all salary and wage rates were increased over 1971-72 rates by ten percent? All other factors were held constant during this simulation.

As shown by the following set of simulation reports, the direct instructional budget would increase over 1971-72 expenditures by $2,978,297 or 32 percent. The RRPM projection reports also show that an additional 2,491 FTE students (+22%) would be accommodated and, under current departmental operating parameters, this would require an additional 129 FTE faculty (+21.5%). Closer examination of the reports will reveal the cost implications for each degree program and each instructional department (discipline).

Following the set of RRPM projection reports is a list of some of the intra-institutional and inter-institutional uses of RRPM output report data.

Currently, a major concern at California State University, Fullerton, as well as on other campuses where cost simulation is beginning to be used, is that differential instructional program costs cannot yet be supported or explained by comprehensive program output information. Fullerton staff are working toward development of program output assessment procedures and hope in the future to be able to conduct cost effectiveness analysis with data available on both the cost and the effectiveness sides of the equation.

PROGRAM BUDGET REPORT

PROGRAM COSTS

INSTRUCTIONAL PROGRAM	COST PER STUDENT	NUMBER OF STUDENTS	PROGRAM COSTS
ACCOUNTING			
LOWER	704.24	86	60,564.64
UPPER	738.42	490	361,825.80
GRADUATE	814.08	12	9,768.96
** TOTALS **	734.96	588	432,159.40
ANTHROPOL			
LOWER	649.34	50	32,467.00
UPPER	678.64	203	137,763.92
GRADUATE	1,096.40	22	24,120.80
** TOTALS **	706.73	275	194,351.72
AREA STUDY			
LOWER	709.48	34	24,122.32
UPPER	754.50	145	109,402.50
** TOTALS **	745.95	179	133,524.82
ART			
LOWER	716.01	180	128,881.80
UPPER	872.22	506	441,343.32
GRADUATE	1,385.20	68	94,193.60
** TOTALS **	881.19	754	664,418.72
BIOLG SCI			
LOWER	857.76	283	242,746.08
UPPER	1,227.91	436	535,368.76
GRADUATE	2,477.00	56	138,712.00
** TOTALS **	1,183.00	775	916,826.84
CHEMISTRY			
LOWER	1,168.56	44	51,416.64
UPPER	1,546.25	76	117,515.00
GRADUATE	3,798.22	10	37,982.20
** TOTALS **	1,591.64	130	206,913.84
COMMUNICAT			
LOWER	700.50	120	84,060.00
UPPER	654.89	361	236,415.29
GRADUATE	1,345.37	29	39,015.73
** TOTALS **	704.88	510	359,491.02
COMPUT SC			
LOWER	846.63	25	21,165.75
UPPER	884.70	41	36,272.70

PROGRAM BUDGET REPORT

PROGRAM COSTS

INSTRUCTIONAL PROGRAM	COST PER STUDENT	NUMBER OF STUDENTS	PROGRAM COSTS
EARTH SCI			
LOWER	973.40	4	3,893.60
UPPER	1,146.31	43	49,291.33
** TOTALS **	1,131.59	47	53,184.93
ECON			
LOWER	725.07	16	11,601.12
UPPER	757.32	76	57,556.32
GRADUATE	1,267.18	10	12,671.80
** TOTALS **	802.25	102	81,829.24
EDUCATION			
GRADUATE	1,080.47	304	328,462.88
** TOTALS **	1,080.47	304	328,462.88
ENGINEERIN			
LOWER	1,081.45	146	157,891.70
UPPER	1,709.08	213	364,034.04
GRADUATE	2,164.42	61	132,029.62
** TOTALS **	1,557.04	420	653,955.36
ENGLISH			
LOWER	723.04	291	210,404.64
UPPER	840.82	672	565,031.04
GRADUATE	1,238.31	102	126,307.62
** TOTALS **	846.71	1,065	901,743.30
FINANCE			
LOWER	783.94	21	16,462.74
UPPER	737.70	163	120,245.10
GRADUATE	1,333.18	9	11,998.62
** TOTALS **	770.50	193	148,706.46
FOR LANG			
LOWER	748.85	112	83,871.20
UPPER	916.62	157	143,909.34
GRADUATE	1,086.33	31	33,676.23
** TOTALS **	871.52	300	261,456.77
GEN BUS			
LOWER	711.53	151	107,441.03
UPPER	731.55	282	206,297.10
GRADUATE	1,294.14	107	138,472.98
** TOTALS **	837.43	540	452,211.11

PROGRAM BUDGET REPORT

PROGRAM COSTS

INSTRUCTIONAL PROGRAM	COST PER STUDENT	NUMBER OF STUDENTS	PROGRAM COSTS
GEOGRAPHY			
LOWER	642.99	36	23,147.64
UPPER	751.86	159	119,545.74
GRADUATE	1,007.82	12	12,093.84
** TOTALS **	747.76	207	154,787.22
HISTORY			
LOWER	691.22	255	176,261.10
UPPER	812.78	760	617,712.80
GRADUATE	927.25	120	111,270.00
** TOTALS **	797.57	1,135	905,243.90
LIBRARY SC			
GRADUATE	777.73	110	85,550.30
** TOTALS **	777.73	110	85,550.30
LINGUISTIC			
LOWER	895.98	14	12,543.72
UPPER	1,033.34	22	22,733.48
GRADUATE	1,296.28	10	12,962.80
** TOTALS **	1,048.70	46	48,240.00
MANAGEMENT			
LOWER	698.81	84	58,700.04
UPPER	746.72	473	353,198.56
GRADUATE	1,233.71	36	44,413.56
** TOTALS **	769.50	593	456,312.16
MARKETING			
LOWER	727.13	32	23,268.16
UPPER	733.32	330	241,995.60
GRADUATE	1,271.33	19	24,155.27
** TOTALS **	759.63	381	289,419.03
MATH			
LOWER	882.79	101	89,161.79
UPPER	1,089.12	121	131,783.52
GRADUATE	2,019.57	15	30,293.55
** TOTALS **	1,060.08	237	251,238.86
MUSIC			
LOWER	1,023.35	116	118,708.60
UPPER	1,376.31	158	217,456.98
GRADUATE	2,246.73	19	42,687.87

PROJECTION FULLERTON DATE 08/15/72

PROGRAM BUDGET REPORT

PROGRAM COSTS

INSTRUCTIONAL PROGRAM	COST PER STUDENT	NUMBER OF STUDENTS	PROGRAM COSTS
PHILOSOPHY			
LOWER	670.14	18	12,062.52
UPPER	794.18	59	46,856.62
** TOTALS **	765.18	77	58,919.14
PHYSICS			
LOWER	1,088.97	15	16,334.55
UPPER	1,383.87	32	44,283.84
** TOTALS **	1,289.75	47	60,618.39
PHYS ED			
LOWER	794.04	133	105,607.32
UPPER	911.79	358	326,420.82
GRADUATE	1,394.13	29	40,429.77
** TOTALS **	908.57	520	472,457.91
POLIT SCI			
LOWER	722.29	162	117,010.98
UPPER	759.43	369	280,229.67
GRADUATE	1,356.00	44	59,664.00
** TOTALS **	794.62	575	456,904.65
PSYCHOLOGY			
LOWER	697.22	179	124,802.38
UPPER	750.52	440	330,228.80
GRADUATE	1,235.72	44	54,371.68
** TOTALS **	768.33	663	509,402.86
QUANT METH			
LOWER	733.20	16	11,731.20
UPPER	799.49	79	63,159.71
GRADUATE	1,010.56	7	7,073.92
** TOTALS **	803.58	102	81,964.83
RELIG ST			
LOWER	670.31	9	6,032.79
UPPER	636.34	14	8,908.76
** TOTALS **	649.63	23	14,941.55
SOCIOLOGY			
LOWER	681.11	221	150,525.31
UPPER	687.41	734	504,558.94
GRADUATE	995.79	53	52,776.87
** TOTALS **	702.24	1,008	707,861.12

RESOURCE REQUIREMENTS PREDICTION MODEL
FULLERTON

PROGRAM BUDGET REPORT

PROGRAM COSTS

INSTRUCTIONAL PROGRAM	COST PER STUDENT	NUMBER OF STUDENTS	PROGRAM COSTS
SPEECH			
LOWER	793.94	38	30,169.72
UPPER	1,030.61	163	167,989.43
GRADUATE	1,567.09	42	65,817.78
** TOTALS **	1,086.32	243	263,976.93
THEATER			
LOWER	980.75	77	75,517.75
UPPER	1,295.72	137	177,513.64
GRADUATE	1,543.96	24	37,055.04
** TOTALS **	1,218.85	238	290,086.43
UNDECLARED			
LOWER	738.73	607	448,409.11
UPPER	800.74	204	163,350.96
GRADUATE	1,097.38	327	358,843.26
** TOTALS **	852.90	1,138	970,603.33
**** TOTALS ****			
LOWER	771.76	3,676	2,836,984.94
UPPER	861.28	8,476	7,300,199.43
GRADUATE	1,251.08	1,732	2,166,872.55
** TOTALS **	886.20	13,884	12,304,056.92

RESOURCE REQUIREMENTS PREDICTION MODEL
FULLERTON

PLANNING PARAMETERS REPORT

DEPARTMENTAL UNIT COST

ACCOUNTING

COURSE LEVEL	CHAIRMAN	FACULTY	STAFF	EXPENSES	ADDT	TOTAL	PROD. RATIO	UNITS	UNIT COST
LOWER	3,767	65,681	6,796	1,720		77,964	717.37	3,551	21.95
UPPER	5,685	114,783	10,256	2,596		133,320	737.62	5,510	24.19
GRADUATE	1,111	27,612	2,004	505		31,232	359.59	525	59.48
TOTAL DOLLARS	10,563	208,076	19,056	4,821		242,516	690.63	9,586	25.30
TOTAL PERSONNEL	.50	13.88	2.50			16.88			

AMER STUDY

COURSE LEVEL	CHAIRMAN	FACULTY	STAFF	EXPENSES	ADDT	TOTAL	PROD. RATIO	UNITS	UNIT COST
LOWER	652	8,136	709	536		10,033	2,245.28	1,190	8.43
UPPER	2,500	29,468	2,716	2,056		36,740	931.03	1,890	19.43
TOTAL DOLLARS	3,152	37,604	3,425	2,592		46,773	1,203.13	3,080	15.19
TOTAL PERSONNEL	.20	2.56	.38			3.14			

ANTHRO

COURSE LEVEL	CHAIRMAN	FACULTY	STAFF	EXPENSES	ADDT	TOTAL	PROD. RATIO	UNITS	UNIT COST
LOWER	1,529	51,852	3,412	1,946		58,739	1,383.13	5,740	10.23
UPPER	4,309	148,580	9,611	5,489		167,989	674.85	7,889	21.29
GRADUATE	468	16,462	1,044	594		18,568	322.83	410	45.28
TOTAL DOLLARS	6,306	216,894	14,067	8,029		245,296	820.51	14,039	17.47
TOTAL PERSONNEL	.40	17.11	1.88			19.39			

ART

COURSE LEVEL	CHAIRMAN	FACULTY	STAFF	EXPENSES	ADDT	TOTAL	PROD. RATIO	UNITS	UNIT COST
LOWER	1,998	108,056	12,191	8,780		131,025	721.06	6,403	20.46
UPPER	4,822	303,023	29,423	21,191		358,459	504.76	10,817	33.13
GRADUATE	1,001	66,282	6,109	4,398		77,790	290.56	1,293	60.16
TOTAL DOLLARS	7,821	477,361	47,723	34,369		567,274	532.59	18,513	30.64
TOTAL PERSONNEL	.45	34.76	5.56			40.77			

BIO SCI

COURSE LEVEL	CHAIRMAN	FACULTY	STAFF	EXPENSES	ADDT	TOTAL	PROD. RATIO	UNITS	UNIT COST
LOWER	2,950	120,132	25,244	28,468		176,794	1,146.19	10,820	16.33
UPPER	5,510	243,161	47,146	53,167		348,984	468.01	8,251	42.29
GRADUATE	1,900	85,849	16,259	18,335		122,343	154.77	941	130.01
TOTAL DOLLARS	10,360	449,142	88,649	99,970		648,121	603.68	20,012	32.39
TOTAL PERSONNEL	.69	33.15	10.60			44.44			

CHEMISTRY

COURSE LEVEL	CHAIRMAN	FACULTY	STAFF	EXPENSES	ADDT	TOTAL	PROD. RATIO	UNITS	UNIT COST
LOWER	4,772	164,931	57,058	49,913		276,674	700.08	8,275	33.43
UPPER	4,792	161,386	57,300	50,122		273,600	274.56	3,259	83.95
GRADUATE	650	24,089	7,771	6,796		39,306	122.36	197	199.52
TOTAL DOLLARS	10,214	350,406	122,129	106,831		589,580	463.68	11,731	50.26
TOTAL PERSONNEL	.63	25.30	12.65			38.58			

PLANNING PARAMETERS REPORT

DEPARTMENTAL UNIT COST

COMM

COURSE LEVEL	CHAIRMAN	FACULTY	STAFF	EXPENSES	ADDT	TOTAL	PROD. RATIO	UNITS	UNIT COST
LOWER	3,752	70,907	8,049	11,298		94,006	777.03	4,600	20.43
UPPER	6,813	135,203	14,617	20,518		177,151	894.88	9,620	18.41
GRADUATE	957	25,312	2,052	2,879		31,200	253.64	383	81.46
TOTAL DOLLARS	11,522	231,422	24,718	34,695		302,357	803.25	14,603	20.71
TOTAL PERSONNEL	.55	18.18	2.91			21.64			

DANCE

COURSE LEVEL	CHAIRMAN	FACULTY	STAFF	EXPENSES	ADDT	TOTAL	PROD. RATIO	UNITS	UNIT COST
LOWER	1,664	14,791	1,861	4,144		22,460	474.40	593	37.87
UPPER	1,811	19,917	2,024	4,508		28,260	252.94	344	82.15
TOTAL DOLLARS	3,475	34,708	3,885	8,652		50,720	359.00	937	54.13
TOTAL PERSONNEL	.20	2.61	.57			3.38			

ECONOMICS

COURSE LEVEL	CHAIRMAN	FACULTY	STAFF	EXPENSES	ADDT	TOTAL	PROD. RATIO	UNITS	UNIT COST
LOWER	4,182	98,085	4,760	2,128		109,155	768.62	5,511	19.80
UPPER	4,929	119,776	5,610	2,507		132,822	687.34	5,808	22.86
GRADUATE	1,318	36,644	1,500	669		40,131	253.98	574	69.91
TOTAL DOLLARS	10,429	254,505	11,870	5,304		282,108	665.16	11,893	23.72
TOTAL PERSONNEL	.63	17.88	1.43			19.94			

EDUCATION

COURSE LEVEL	CHAIRMAN	FACULTY	STAFF	EXPENSES	ADDT	TOTAL	PROD. RATIO	UNITS	UNIT COST
LOWER	605	16,582	1,360	745		19,292	603.03	796	24.23
UPPER	13,162	393,583	29,569	16,256		452,570	502.93	14,424	31.37
GRADUATE	8,206	275,152	18,434	10,134		311,926	453.91	8,116	38.43
TOTAL DOLLARS	21,973	685,317	49,363	27,135		783,788	487.39	23,336	33.59
TOTAL PERSONNEL	1.15	47.88	6.70			55.73			

ENGR

COURSE LEVEL	CHAIRMAN	FACULTY	STAFF	EXPENSES	ADDT	TOTAL	PROD. RATIO	UNITS	UNIT COST
LOWER	1,786	59,147	11,517	7,567		80,017	389.33	1,460	54.80
UPPER	8,545	256,995	55,099	36,215		356,854	285.40	5,120	69.69
GRADUATE	1,857	52,460	11,977	7,870		74,164	233.33	910	81.49
TOTAL DOLLARS	12,188	368,602	78,593	51,652		511,035	292.69	7,490	68.23
TOTAL PERSONNEL	.70	25.59	7.93			34.22			

ENGLISH

COURSE LEVEL	CHAIRMAN	FACULTY	STAFF	EXPENSES	ADDT	TOTAL	PROD. RATIO	UNITS	UNIT COST
LOWER	4,608	204,708	11,233	5,999		226,553	615.27	10,035	22.57
UPPER	13,057	682,539	31,840	16,999		744,435	561.55	25,949	28.68
GRADUATE	1,469	83,406	3,582	1,910		90,367	289.62	1,506	60.00
TOTAL DOLLARS	19,134	970,653	46,660	24,908		1,061,355	553.60	37,490	28.31
TOTAL PERSONNEL	1.20	67.72	6.09			75.01			

PLANNING PARAMETERS REPORT

DEPARTMENTAL UNIT COST

ETH ST AFR

COURSE LEVEL	CHAIRMAN	FACULTY	STAFF	EXPENSES	ADDT	TOTAL	PROD. RATIO	UNITS	UNIT COST
LOWER	1,117	26,564	3,984	992		32,657	410.81	912	35.80
UPPER	1,374	31,971	4,899	1,221		39,465	787.18	2,149	18.36
TOTAL DOLLARS	2,491	58,535	8,883	2,213		72,122	618.38	3,061	23.56
TOTAL PERSONNEL	.20	4.95	1.24			6.39			

ETH ST CHI

COURSE LEVEL	CHAIRMAN	FACULTY	STAFF	EXPENSES	ADDT	TOTAL	PROD. RATIO	UNITS	UNIT COST
LOWER	1,573	31,826		1,027		34,426	507.60	1,269	27.12
UPPER	1,737	36,300		1,134		39,171	585.87	1,617	24.22
TOTAL DOLLARS	3,310	68,126		2,161		73,597	548.67	2,886	25.50
TOTAL PERSONNEL	.20	5.26	.00			5.46			

FINANCE

COURSE LEVEL	CHAIRMAN	FACULTY	STAFF	EXPENSES	ADDT	TOTAL	PROD. RATIO	UNITS	UNIT COST
UPPER	3,993	136,748	16,574	3,512		160,827	702.92	6,734	23.88
GRADUATE	654	26,660	2,716	573		30,603	292.99	460	66.52
TOTAL DOLLARS	4,647	163,408	19,290	4,085		191,430	645.20	7,194	26.61
TOTAL PERSONNEL	.22	11.15	2.45			13.82			

FOR LANG

COURSE LEVEL	CHAIRMAN	FACULTY	STAFF	EXPENSES	ADDT	TOTAL	PROD. RATIO	UNITS	UNIT COST
LOWER	6,018	181,094	19,161	6,379		212,652	602.69	8,745	24.31
UPPER	3,952	131,341	12,584	4,188		152,065	414.27	3,948	38.51
GRADUATE	593	20,341	1,888	625		23,447	377.62	540	43.42
TOTAL DOLLARS	10,563	332,776	33,633	11,192		388,164	519.55	13,233	29.33
TOTAL PERSONNEL	.50	25.47	3.56			29.53			

GEOGRAPHY

COURSE LEVEL	CHAIRMAN	FACULTY	STAFF	EXPENSES	ADDT	TOTAL	PROD. RATIO	UNITS	UNIT COST
LOWER	5,133	88,228	6,336	4,218		103,915	831.37	5,936	17.50
UPPER	4,911	95,265	6,061	4,033		110,270	636.46	4,347	25.36
GRADUATE	301	6,008	372	247		6,928	304.76	128	54.12
TOTAL DOLLARS	10,345	189,501	12,769	8,498		221,113	723.49	10,411	21.24
TOTAL PERSONNEL	.60	14.39	1.88			16.87			

HISTORY

COURSE LEVEL	CHAIRMAN	FACULTY	STAFF	EXPENSES	ADDT	TOTAL	PROD. RATIO	UNITS	UNIT COST
LOWER	1,636	108,986	6,807	3,864		121,293	1,210.56	9,515	12.74
UPPER	6,808	456,283	28,320	16,082		507,493	547.86	17,915	28.32
GRADUATE	501	39,951	2,087	1,183		43,722	494.19	1,191	36.71
TOTAL DOLLARS	8,945	605,220	37,214	21,129		672,508	666.07	28,621	23.50
TOTAL PERSONNEL	.60	42.97	4.73			48.30			

PLANNING PARAMETERS REPORT

DEPARTMENTAL UNIT COST

INT DIS ST

COURSE LEVEL	CHAIRMAN	FACULTY	STAFF	EXPENSES	ADDT	TOTAL	PROD. RATIO	UNITS	UNIT COST
LOWER		1,870		105		1,975	2,031.25	325	6.07
UPPER		95,052		4,233		99,285	811.13	5,175	19.18
GRADUATE							.00	41	.00
TOTAL DOLLARS		96,922		4,338		101,260	847.25	5,541	18.27
TOTAL PERSONNEL	.00	6.54	.00			6.54			

LIBRARY

COURSE LEVEL	CHAIRMAN	FACULTY	STAFF	EXPENSES	ADDT	TOTAL	PROD. RATIO	UNITS	UNIT COST
UPPER		7,562		690		8,252	1,253.06	614	13.43
GRADUATE		65,747		7,512		73,259	520.49	2,769	26.45
TOTAL DOLLARS		73,309		8,202		81,511	582.27	3,383	24.09
TOTAL PERSONNEL	.00	5.81	.00			5.81			

LINGUISTIC

COURSE LEVEL	CHAIRMAN	FACULTY	STAFF	EXPENSES	ADDT	TOTAL	PROD. RATIO	UNITS	UNIT COST
UPPER		32,537	2,355	1,839		36,731	304.20	724	50.73
GRADUATE		14,382	890	694		15,966	413.33	372	42.91
TOTAL DOLLARS		46,919	3,245	2,533		52,697	334.15	1,096	48.08
TOTAL PERSONNEL	.00	3.28	.36			3.64			

MANAGEMENT

COURSE LEVEL	CHAIRMAN	FACULTY	STAFF	EXPENSES	ADDT	TOTAL	PROD. RATIO	UNITS	UNIT COST
UPPER	8,158	276,766	21,543	8,809		315,276	633.30	12,685	24.85
GRADUATE	533	23,040	1,407	574		25,554	341.22	447	57.16
TOTAL DOLLARS	8,691	299,806	22,950	9,383		340,830	615.37	13,132	25.95
TOTAL PERSONNEL	.50	21.34	2.98			24.82			

MARKETING

COURSE LEVEL	CHAIRMAN	FACULTY	STAFF	EXPENSES	ADDT	TOTAL	PROD. RATIO	UNITS	UNIT COST
UPPER	5,106	197,247	11,184	5,453		218,990	679.18	9,264	23.63
GRADUATE	509	21,961	1,114	543		24,127	258.09	351	68.73
TOTAL DOLLARS	5,615	219,208	12,298	5,996		243,117	641.00	9,615	25.29
TOTAL PERSONNEL	.28	15.00	1.50			16.78			

MATH

COURSE LEVEL	CHAIRMAN	FACULTY	STAFF	EXPENSES	ADDT	TOTAL	PROD. RATIO	UNITS	UNIT COST
LOWER	8,362	235,701	15,552	6,244		265,859	497.00	8,131	32.69
UPPER	2,325	67,304	4,325	1,735		75,689	409.01	1,961	40.67
GRADUATE	470	17,562	874	348		19,254	180.43	166	115.98
TOTAL DOLLARS	11,157	320,567	20,751	8,327		360,802	465.32	10,158	35.52
TOTAL PERSONNEL	.60	21.83	2.62			25.05			

PLANNING PARAMETERS REPORT

DEPARTMENTAL UNIT COST

MUSIC

COURSE LEVEL	CHAIRMAN	FACULTY	STAFF	EXPENSES	ADDT	TOTAL	PROD. RATIO	UNITS	UNIT COST
LOWER	7,179	197,907	39,476	20,326		264,888	430.77	6,565	40.34
UPPER	5,733	170,094	31,524	16,230		223,581	298.77	3,636	61.49
GRADUATE	659	23,044	3,625	1,863		29,191	180.00	252	115.83
TOTAL DOLLARS	13,571	391,045	74,625	38,419		517,660	362.83	10,453	49.52
TOTAL PERSONNEL	.82	28.81	8.35			37.98			

PHILOS

COURSE LEVEL	CHAIRMAN	FACULTY	STAFF	EXPENSES	ADDT	TOTAL	PROD. RATIO	UNITS	UNIT COST
LOWER	4,142	58,139	4,109	1,896		68,286	969.18	4,623	14.77
UPPER	4,308	75,319	4,273	1,971		85,871	587.90	2,916	29.44
TOTAL DOLLARS	8,450	133,458	8,382	3,867		154,157	774.82	7,539	20.45
TOTAL PERSONNEL	.40	9.73	1.17			11.30			

HEPER

COURSE LEVEL	CHAIRMAN	FACULTY	STAFF	EXPENSES	ADDT	TOTAL	PROD. RATIO	UNITS	UNIT COST
LOWER	3,993	156,648	26,522	26,928		214,091	573.95	7,140	29.98
UPPER	5,133	220,964	34,091	34,615		294,803	587.43	9,393	31.38
GRADUATE	693	34,803	4,604	4,673		44,773	334.72	723	61.92
TOTAL DOLLARS	9,819	412,415	65,217	66,216		553,667	564.11	17,256	32.09
TOTAL PERSONNEL	.65	30.59	7.95			39.19			

PHYSICS

COURSE LEVEL	CHAIRMAN	FACULTY	STAFF	EXPENSES	ADDT	TOTAL	PROD. RATIO	UNITS	UNIT COST
LOWER	5,334	130,550	45,808	38,119		219,811	378.69	3,306	66.48
UPPER	2,713	69,313	23,297	19,385		114,708	456.31	2,026	56.61
GRADUATE							.00	11	.00
TOTAL DOLLARS	8,047	199,863	69,105	57,504		334,519	405.69	5,343	62.61
TOTAL PERSONNEL	.40	13.17	6.72			20.29			

POL SCI

COURSE LEVEL	CHAIRMAN	FACULTY	STAFF	EXPENSES	ADDT	TOTAL	PROD. RATIO	UNITS	UNIT COST
LOWER	1,624	51,580	3,464	1,800		58,468	1,116.67	4,556	12.83
UPPER	7,186	251,721	15,328	7,973		282,208	603.82	10,899	25.89
GRADUATE	1,122	40,955	2,394	1,243		45,714	251.06	708	64.56
TOTAL DOLLARS	9,932	344,256	21,186	11,016		386,390	647.82	16,163	23.91
TOTAL PERSONNEL	.60	24.95	2.74			28.29			

PSYCHOLOGY

COURSE LEVEL	CHAIRMAN	FACULTY	STAFF	EXPENSES	ADDT	TOTAL	PROD. RATIO	UNITS	UNIT COST
LOWER	3,121	112,013	9,431	14,341		138,906	756.61	6,295	22.06
UPPER	5,645	194,451	17,060	25,941		243,097	666.58	10,032	24.23
GRADUATE	694	32,706	2,096	3,186		38,682	327.03	605	63.93
TOTAL DOLLARS	9,460	339,170	28,587	43,468		420,685	671.37	16,932	24.85
TOTAL PERSONNEL	.60	25.22	3.53			29.35			

RESOURCE REQUIREMENTS PREDICTION MODEL
FULLERTON

PLANNING PARAMETERS REPORT

DEPARTMENTAL UNIT COST

QUANT METH

COURSE LEVEL	CHAIRMAN	FACULTY	STAFF	EXPENSES	ADDT	TOTAL	PROD. RATIO	UNITS	UNIT COST
LOWER	2,709	93,165	9,743	3,097		108,714	613.81	4,266	25.48
UPPER	4,221	147,489	15,182	4,825		171,717	546.17	5,915	29.03
GRADUATE	370	14,455	1,331	421		16,577	406.32	386	42.94
TOTAL DOLLARS	7,300	255,109	26,256	8,343		297,008	564.18	10,567	28.11
TOTAL PERSONNEL	.40	18.73	3.18			22.31			

THEATER

COURSE LEVEL	CHAIRMAN	FACULTY	STAFF	EXPENSES	ADDT	TOTAL	PROD. RATIO	UNITS	UNIT COST
LOWER	1,881	71,693	18,617	10,136		102,327	463.97	2,640	38.76
UPPER	4,196	165,491	41,520	22,608		233,815	355.87	4,516	51.77
GRADUATE	228	9,574	2,257	1,226		13,285	365.22	252	52.71
TOTAL DOLLARS	6,305	246,758	62,394	33,970		349,427	388.46	7,408	47.17
TOTAL PERSONNEL	.42	19.07	6.68			26.17			

RELIG STUD

COURSE LEVEL	CHAIRMAN	FACULTY	STAFF	EXPENSES	ADDT	TOTAL	PROD. RATIO	UNITS	UNIT COST
LOWER	593	10,933	572	237		12,335	437.50	280	44.05
UPPER	3,238	57,755	3,123	1,298		65,414	995.13	3,473	18.83
TOTAL DOLLARS	3,831	68,688	3,695	1,535		77,749	908.72	3,753	20.72
TOTAL PERSONNEL	.20	4.13	.41			4.74			

SCI/MATH ED

COURSE LEVEL	CHAIRMAN	FACULTY	STAFF	EXPENSES	ADDT	TOTAL	PROD. RATIO	UNITS	UNIT COST
LOWER	5,669	134,344	12,113	15,960		168,086	543.64	5,556	30.25
UPPER	4,598	109,309	9,825	12,944		136,676	355.49	2,947	46.37
GRADUATE	110	2,512	236	310		3,168	670.00	134	23.64
TOTAL DOLLARS	10,377	246,165	22,174	29,214		307,930	461.62	8,637	35.65
TOTAL PERSONNEL	.55	18.71	2.62			21.88			

SPEECH COM

COURSE LEVEL	CHAIRMAN	FACULTY	STAFF	EXPENSES	ADDT	TOTAL	PROD. RATIO	UNITS	UNIT COST
LOWER	3,500	82,501	6,947	4,229		97,177	512.52	3,562	27.28
UPPER	6,019	172,613	11,947	7,274		197,853	423.10	5,056	39.13
GRADUATE	1,430	46,050	2,838	1,727		52,045	263.73	749	69.48
TOTAL DOLLARS	10,949	301,164	21,732	13,230		347,075	430.86	9,367	37.05
TOTAL PERSONNEL	.60	21.74	2.83			25.17			

SOCIOLOGY

COURSE LEVEL	CHAIRMAN	FACULTY	STAFF	EXPENSES	ADDT	TOTAL	PROD. RATIO	UNITS	UNIT COST
LOWER	1,335	57,905	4,636	3,202		67,078	869.70	4,105	16.34
UPPER	6,185	276,728	21,473	14,839		319,225	754.39	16,491	19.35
GRADUATE	792	36,519	2,750	1,899		41,960	383.57	1,074	39.06
TOTAL DOLLARS	8,312	371,152	28,859	19,940		428,263	737.58	21,670	19.76
TOTAL PERSONNEL	.60	29.38	3.82			33.80			

RRPM-1.6 (35)
PROJECTION

RESOURCE REQUIREMENTS PREDICTION MODEL
FULLERTON

DATE 08/15/72

PLANNING PARAMETERS REPORT

DEPARTMENTAL UNIT COST

**** TOTALS ****

COURSE LEVEL	CHAIRMAN	FACULTY	STAFF	EXPENSES	ADDT	TOTAL	PROD. RATIO	UNITS	UNIT COST
LOWER	97,184	2,814,655	377,473	286,344		3,575,056	682.81	146,797	24.36
UPPER	173,474	6,084,037	631,699	454,456		7,343,666	557.04	243,358	30.18
GRADUATE	28,596	1,169,538	104,211	82,937		1,385,282	343.47	26,437	52.40
TOTAL DOLLARS	299,254	10,068,230	1,113,383	823,737		12,304,604	571.58	416,592	29.54
TOTAL PERSONNEL	17.24	728.84	130.52			876.60			

USES OF RRPM 1.6 OUTPUT REPORT DATA

I. Intra-institutional uses:

1. Facilitates planning and budgeting by output producing programs as well as for organizational units

2. Facilitates investigation of many alternative ways of using a limited pool of resources

3. Facilitates preparation of the budget document

4. Improves understanding of the instructional production function

5. Facilitates investigation of long-range implications of current decisions (trend analysis)

II. Inter-institutional uses:

1. Facilitates comparison of cost-per-student-major among institutions

2. Supports program planning and budgeting at the state-wide level

III. Limitations and concerns:

1. Differential program cost information cannot currently be supported by comprehensive program outcome information

WHAT NEXT?

Initial implementation of currently available NCHEMS products has given Fullerton improved understanding of how resources have been utilized in the past and the capability to investigate alternative plans for future operation. Now, the question becomes, what next?

Campus personnel are confronted with the task of developing means of effectively using their new tools and planning capabilities. Some basic changes in the planning and management structure are being contemplated. Fullerton administrators have expressed their intention to avoid the trap of "doing business as usual" despite the availability of the new techniques. A desire to begin planning by degree program as opposed to traditional department units is being expressed. The department is seen as the location of fiduciary responsibility, whereas the degree program planning process should define the demand to be placed on individual departments and the amount of resources provided to them.

The key to changing the planning and management cycle in an institution is people. Individuals must be willing to learn new methods and accept new approaches. It must be perceived that there is some real advantage for both the institution and for individuals or the innovations will not be adopted. Those who serve as change agents must realize that change frequently takes more time than is at first anticipated. If many complex new procedures are initiated simultaneously, trauma and resistance are likely to occur. Experience has taught us that progress usually comes in small increments. California State University, Fullerton, at the time of this publication, is really nearer the beginning than the end of its pilot implementation project.

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